

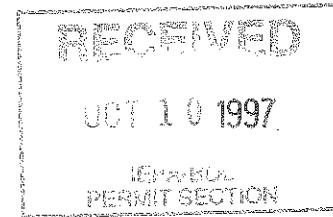
FINAL REPORT

Phibro-Tech, Inc.

RCRA Phase I Facility
Investigation
Joliet, Illinois Facility

October 1997

Project No. 95237



Environmental Resources Management
704 N. Deerpath Drive
Vernon Hills, Illinois 60061



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INTRODUCTION

Environmental Resources Management-North Central, Inc. (ERM-North Central) was contracted by Phibro-Tech, Inc. (Phibro-Tech) to continue Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation (Phase I RFI) activities at Phibro-Tech's Joliet, Illinois, facility (Figure 1). The Phase I RFI was previously initiated by Montgomery Watson Americas, Inc. (Montgomery Watson).

In April 1994, Montgomery Watson submitted their Phase I RFI Work Plan (the "Work Plan") to the Illinois Environmental Protection Agency (IEPA) for approval. Subsequently, the IEPA commented on and made modifications to the Work Plan via a letter to Montgomery Watson dated September 22, 1994. The initial field work was then completed by Montgomery Watson pursuant to the Work Plan as modified by the IEPA. Results of Montgomery Watson's activities are presented in Appendix A.

In November 1996, ERM-North Central was retained to continue Phase I RFI activities to determine further if any releases had impacted the soil at the site. ERM-North Central reviewed the data collected by Montgomery Watson's investigation and collected additional soil data. This report describes the methodology used and the results obtained during the Phase I RFI.

1.1

SITE LOCATION

The Phibro-Tech facility is located at 10 Industry Drive in Joliet, Illinois, in the northeast corner of the northeast corner of Section 4 of Township 35 North and Range 10 East. The Chicago Sanitary and Ship Canal is located approximately 750 feet east of the site. The facility is located within the Joliet Industrial District of northern Joliet. Predominant land use within 1,000 feet of the facility is industrial and the nearest residence is approximately 775 feet southwest of the facility (Montgomery Watson, 1994).

1.2

SITE BACKGROUND

Phibro-Tech purchased the property in 1970, and manufacturing operations began in 1973. Prior to ownership by Phibro-Tech, several businesses occupied the land.

Phibro-Tech is an inorganic chemical processing plant that primarily serves the plating and circuit board industries. Products manufactured at the facility include: alkaline-based etchant and metallic salts

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(predominantly carbonates, chlorides, nitrates, sulfates, and oxides of copper and/or nickel). These products are manufactured in batch reactor processes from raw materials such as copper metal, technical grade acids and alkalines, and other virgin metal bearing salts, as well as from waste materials.

Phibro-Tech currently operates under a RCRA Part B permit issued September 27, 1993, and modified March 15, 1995. The Part B permit specifies that the facility can only accept the following hazardous wastes:

<i>Characteristically Hazardous Waste</i>	
D002	Solid waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste.
D004	Solid waste exhibiting the characteristic of TCLP toxicity for arsenic at 5.0 mg/L or more.
D005	Solid waste exhibiting the characteristic of TCLP toxicity for barium at 100 mg/L or more.
D006	Solid waste exhibiting the characteristic of TCLP toxicity for cadmium at 1.0 mg/L or more.
D007	Solid waste exhibiting the characteristic of TCLP toxicity for chromium at 5.0 mg/L or more.
D008	Solid waste exhibiting the characteristic of TCLP toxicity for lead at 5.0 mg/L or more.
D010	Solid waste exhibiting the characteristic of TCLP toxicity for selenium at 1.0 mg/L or more.
D011	Solid waste exhibiting the characteristic of TCLP toxicity for silver at 5.0 mg/L or more.
<i>Hazardous Wastes from Nonspecific Sources</i>	
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc, and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.

To obtain closure of the permitted units, the Part B permit requires that a Phase I RFI be conducted at the following nine solid waste management units (SWMUs):

Number	Name
1	Container Storage Area 1
2	Chemical Sewer System
3	Sludge Storage Pad
4	Former Drum Storage Area 1
5	Rail Car Unloading Area
6	Ferric Chloride Filter Press
7	Outside Drum Storage Area 2
8	Process Sewer System
9	Truck Unloading Area

The location of each SWMU is shown in Figure 2. The RFI results are organized in this report by the aforementioned SWMUs.

2.1

PHASE I-A FIELD METHODS

In May and June 1995, Montgomery Watson advanced 32 soil borings within and around the nine SWMUs located at Phibro-Tech. Figure 3 depicts the locations of each SWMU and their respective soil borings. Soil boring locations that could be accessed by the truck-mounted drill rig were sampled on May 24 and 25, 1995. Additional sampling was conducted on June 5, 1995 using a skid rig to complete the remaining soil borings that could not be accessed by the truck-mounted drill rig.

Drilling operations were performed by Rock and Soil Drilling Corporation of St. Charles, Illinois (Rock and Soil), under the supervision of Montgomery Watson. At the soil boring locations where sample recovery was poor or overhead utility clearance was limited, soil samples were collected directly from the auger flights. The remaining sample locations were continuously sampled with a split-spoon sampler. Soil sampling indoors beneath the concrete floors was performed utilizing a concrete core barrel to initially core through the floor, followed by sample collection using a stainless-steel hand auger. Montgomery Watson's soil boring logs are included in Appendix A.

Soil samples were visually inspected and classified using the Unified Soils Classification System. Soil pH readings from each boring were measured by placing a portion of each sample in a laboratory-cleaned glass jar containing approximately 2 to 3 ounces of distilled water of a known pH. The soil and water were stirred, and a pH reading was taken of the mixture. Soil classification and field pH measurements were recorded on the soil boring logs presented in Appendix A.

One soil sample from each boring was collected and submitted to Montgomery Watson Laboratories, of Madison, Wisconsin for laboratory analysis. In addition to the soil samples, one water sample (labeled SW-8) was collected from the open borehole SB-8 located in SWMU No. 2. The sample was field filtered by Montgomery Watson personnel and submitted to the laboratory for analysis of metals. The Work Plan indicated that soil samples were to be analyzed using the Toxicity Characteristic Leaching Procedure (TCLP), as referenced in the United States Environmental Protection Agency's (USEPA's) *Test Methods for Evaluating Solid Waste Physical/Chemical Methods* EPA SW-846 (SW-864), for evaluation of the potential of targeted metals to leach to ground water. The initial TCLP analyses was conducted for the target metals identified to be present in facility processes as specified in the Work Plan (i.e., arsenic, barium, cadmium, chromium, lead, nickel, selenium, and silver). To

conduct a risk-based evaluation, the laboratory was asked to analyze all the soil samples for the eight RCRA metals, as indicated on the chain-of-custody for the samples. When the laboratory conducted these analyses, they replaced nickel with mercury in the analyses. By the time the results were reported and this mistake had been identified, the sample volume was reportedly depleted or the sample was beyond the holding time. Two duplicate samples were analyzed as part of quality assurance/quality control (QA/QC) for the laboratory analysis.

2.2 PHASE I-B FIELD METHODS

Following a review of sampling activities performed by Montgomery Watson, ERM-North Central identified the need for additional data to further assess releases from each SWMU. ERM-North Central requested the analysis of samples held by Montgomery Watson for total metals. The results for samples that were within holding times are presented in Appendix B. In November and December 1996, ERM-North Central collected additional soil samples from borings located adjacent to Montgomery Watson's original borings and submitted them to IEA Laboratories of Schaumburg, Illinois (IEA), for analysis of total metals.

Drilling operations for Phase I-B activities were performed by Rock and Soil under the supervision of ERM-North Central. At the soil boring locations where sample recovery was poor or overhead utility clearance was limited, soil samples were collected directly from the auger flights. Rock and Soil advanced soil borings at locations inside the buildings and beneath the concrete floors by using a concrete core barrel. ERM-North Central then collected samples using a stainless-steel hand auger or skid-mounted drilling rig, as appropriate, and split-spoon collection devices.

One soil sample was collected from each boring and submitted to IEA for analysis of total metals.

3.1**REGIONAL GEOLOGY AND HYDROGEOLOGY**

ERM-North Central reviewed the soil boring logs provided by Montgomery Watson and the following documents to determine the hydrogeology of the Site.

- USGS 7.5-minute topographic map of the Property.
- *Bedrock Aquifers of Northeastern Illinois*, by G.M. Hughes, P. Kraatz, and R.A. Landon (Illinois State Geological Survey [ISGS Circular 406]), 1966).
- *Potential for Contamination of Shallow Aquifers in Illinois*, by R.C. Berg, J.P. Kempton, and K. Cartwright (ISGS Circular 532, 1984).
- *Stack-Unit Mapping of Geologic Materials in Illinois to a Depth of 15 Meters*, by R.C. Berg and J.P. Kempton (ISGS Circular 542, 1988).
- *Summary of the Geology of the Chicago Area*, by H.B. Willman (ISGS Circular 460, 1971).
- *Glacial Drift in Illinois: Thickness and Character*, by K. Piskin and R.E. Bergstrom (ISGS Circular 490, 1975).
- *Geology, Hydrology, and Water Quality of the Cambrian and Ordovician Systems in Northern Illinois*, by A. Visocky, M. Sherrill, and K. Cartwright, ISGS and Illinois State Water Survey (ISWS) Cooperative Ground Water Report 10, dated 1985;
- *Water Resources Availability, Quality, and Cost in Northeastern Illinois*, by R.J. Schicht, J.R. Adams, and J. B. Stall, 1976 and Illinois State Water Survey Report of Investigation 83, 90 p.
- *Ground-Water Resources of DuPage County, Illinois*, by A. J. Zeisel, W.C. Walton, R.T. Sasman, and T.A. Prickett, ISGS Cooperative Ground-Water Report 2, dated 1962.

The lowermost sedimentary bedrock underlying the site is comprised of a complex series of Cambrian and Ordovician sandstones, siltstones, dolomites, and shales (Willman, 1971). The uppermost bedrock in the study area is composed of Silurian dolomite of the Alexandrian and Niagaran Series (Willman, 1971). The stratigraphic sequence of the Silurian deposits (i.e., from bottom to top) consists of the Edgewood and

Kankakee Formations of the Alexandrian Series overlain by the Joliet, Waukesha, Racine, and Port Byron Formations of the Niagaran Series (Visocky, et al., 1985). All of these formations generally consist of light gray, pure to silty, sometimes cherty, well-bedded dolomite (Willman, 1971). The dolomite contains extensive fractures and solution cavities that are irregularly distributed throughout the unit, but are more common in its upper portion. The Silurian bedrock is overlain by less than 5 feet of unconsolidated residuum or loess.

The regional hydrogeological information provided below was obtained from Schicht, et al. (1976), and Visocky, et al. (1985). According to these sources, the primary aquifers in the Chicago area are, from oldest to youngest (i.e., bottom to top):

- Basal Bedrock Aquigroup,
- Midwest Bedrock Aquigroup,
- Upper Bedrock Aquigroup, and
- Prairie Aquigroup.

The Midwest Bedrock Aquigroup is separated from the Upper Bedrock Aquigroup by a regional aquiclude, which is made up of a thick sequence of shales assigned to the Maquoketa Group. Because these shales are relatively thick (i.e., 110 to 265 feet thick) and have a low leakage coefficient (i.e., 25×10^{-7} gpd/cubic foot) in the Chicago area, they effectively protect the underlying aquigroups from contamination (Schicht, et al., 1976). Therefore, the lowermost aquifer relevant to this investigation is the Silurian dolomite aquifer of the Upper Bedrock Aquigroup.

The shallow Silurian dolomite aquifer consists of dolomites of the Alexandrian and Niagaran Series. The approximate thickness of the Silurian dolomite aquifer in the vicinity of the site is 250 feet, based upon mapping by the ISGS (Hughes et al., 1966).

Ground water yields within the Silurian dolomite aquifer are inconsistent because of the irregular distribution of the fractures and solution cavities within the bedrock (Schicht, et al., 1976). The upper portion of the aquifer is more productive than the lower portion because of the larger number of fractures and solution cavities (Schicht, et al. [1976] and Zeisel, et al. [1962]). According to Schicht, et al. (1976), well yields in the Silurian dolomite are variable but can exceed 500 gpm in the region. The aquifer is principally recharged from the vertical leakage of precipitation through the overlying glacial drift in areas where the Silurian dolomite aquifer is unconfined (Schicht, et al., 1976).

The Prairie Aquigroup is not a viable water producing unit in the vicinity of the site because only a thin residuum of weathered bedrock and loess overlie the Silurian dolomite aquifer.

According to the Berg et al. (1984), the site is within an area rated as:

- "A1" ("Permeable bedrock at or within 20 feet of land surface, variable overlying materials") for the land burial of municipal waste; and
- "A1" (jointed limestone, dolomite or porous sandstone of Ordovician, Silurian, and Mississippian age, within 5 feet of the surface) for the surface and near-surface burial of municipal waste.

The foregoing rates are based on a scale developed to indicate the capacities of earth materials to accept, transmit, restrict, or remove contaminants from waste effluents. The lower the letter (i.e., "A" being the lowest) and the lower the number for each letter rating, the greater the potential for contaminants, if any, to impact the shallow aquifer. The rating scale for the two potential waste disposal scenarios extend from A1 through G for the land burial of municipal waste and A1 through D3 for the surface and near-surface disposal of waste. Based on this rating scale, this area has been rated as having a high potential for the contamination of the shallow aquifer from surficial discharges.

3.2

SITE-SPECIFIC GEOLOGY AND HYDROGEOLOGY

Based on information contained in boring logs compiled by Montgomery Watson, the near-surface geology of the Site is comprised of shallow dolomite bedrock overlain by a thin veneer of loess, bedrock residuum, and fill materials. None of the 32 soil borings drilled at the Site penetrated the dolomite bedrock, but in 13 soil borings, auger refusal was encountered at depths between 1.5 to 4 feet, which was interpreted as bedrock based on cuttings.

The bedrock residuum consists of dark yellowish brown silt, sand, and gravel with a trace of clay. Weathered dolomite bedrock was noted in some of the borings. At locations SB-6 and SB-13, black silt was also noted in the residuum.

The fill material is composed of various materials ranging from black silt, sand, and gravel (with and without brick) to orange-brown, fine to medium sand to brick, gravel, and concrete. The origin and distribution of the various fill materials is unknown.

As discussed in Section 2.0, water was encountered in one boring (i.e., SB-8) at a depth of 2 feet below the surface. The soil boring log for SB-8 indicates that this water is accumulating in fill material that consists of gravel, sand, and brick. Water was not noted in any other soil boring. Because the lack of water at other locations and the coarse nature of the fill material at SB-8, it appears that this water is perched on less permeable materials. Because water is present in fill material at this boring and was not observed at other borings, it should not be considered ground water as defined at 35 Illinois Administrative Code (IAC) 620.

Montgomery Watson's Work Plan describes the sampling and analytical procedures conducted to evaluate releases and potential impact of industrial activities performed at the Phibro-Tech site. The approved Work Plan and modifications incorporating IEPA's comments was developed to comply with regulatory evaluation methods for 1994. Evaluations presented in this section reflect current regulatory methods of evaluation.

The following subsections summarize the findings of the Phase I RFI Soil Investigation at each SWMU. A summary table of all TCLP metals data and all total metals data are provided on Table 1 and Table 2. The results discussed in each SWMU subsection are divided into (1) field investigation results that pertain to physical characteristics of the soil in the area of each SWMU and (2) discussion of analytical results.

An initial evaluation of the analytical data was performed according to methodologies presented in 35 IAC Part 742, *Tiered Approach to Cleanup Objectives Guidance Document* (TACO). TACO was finalized on June 5, 1997. Therefore, total metal analytical results were compared to Tier 1 look-up tables. Specifically, analytical results were compared to Exposure Route-Specific values for soils found in Appendix B, Table B of TACO for industrial/commercial properties. Values were also compared to values for the soil component of the ground water ingestion route found in Appendix B, Table C of TACO for pH-specific values. Field pH values collected by Montgomery Watson indicated neutral to basic soils were present at the site; therefore, ERM-North Central used a site-wide pH of 7.0 for data evaluation purposes (Table 3).

4.1 SWMU NO. 1 - CONTAINER STORAGE AREA 1

Field Investigation Results

In May and June 1995, Montgomery Watson advanced five soil borings (SB-01 through SB-05) within and around the container storage area. Reportedly, materials encountered in the container storage area consisted of fill (i.e., silt, sand, gravel, small pieces of brick, etc.). Natural soil was not found at soil boring SB-03. Instead, two concrete floors separated by 20 inches of fill material was encountered (Appendix A). Montgomery Watson recorded field-measured soil pH that varied from 6.99 in SB-04 to 9.27 in SB-01 (Table 3). In November and December 1996, ERM-North Central collected soil samples adjacent to borings SB-01 through SB-05. ERM-North Central observed similar site conditions as reported by Montgomery Watson at sample locations SB-01, SB-02, SB-04, and SB-05.

At SB-03, ERM-North Central encountered one concrete floor and auger refusal at 2.5 feet BGS. Auger refusal was believed to be from encountering bedrock as observed from cuttings, not a second concrete floor.

4.1.2 *Analytical Summary*

Total metal concentrations were compared to TACO Tier 1 soil remediation objectives for industrial/commercial properties and pH-specific soil remediation objectives for the soil component of ground water ingestion routes (Table 4).

Arsenic levels above the industrial/commercial ingestion pathway clean-up objective (CUO) were found in SB-01 through SB-05. Cadmium was detected above the pH-specific soil component of the ground water ingestion pathway in boring SB-04. Nickel concentrations in borings SB-01, SB-02, SB-04, and SB-05 were also above the pH-specific soil component of the ground water ingestion pathway.

4.2 *SWMU NO. 2 - CHEMICAL SEWER SYSTEM*

4.2.1 *Field Investigation Results*

In May and June 1995, Montgomery Watson advanced four soil borings (SB-06 through SB-08, and SB-30) along the former chemical sewer system. Reportedly, soil samples were collected from the auger flights due to Montgomery Watson's inability to drive split-spoons through the gravel fill, and because of overhead interference. Samples consisted of gravel fill material from the ground surface to the weathered bedrock, which was reportedly located approximately 3 feet below ground surface (BGS) (Appendix A). Montgomery Watson recorded field-measured soil pH that ranged between 6.24 in SB-06 to 9.49 in SB-08 (Table 3). Samples were not collected from the SB-09 location due to the inability of the drill rig to access the location. ERM-North Central collected soil samples from borings adjacent to SB-06, SB-07, SB-08, and SB-30 in November and December 1996. ERM-North Central observed similar site conditions as reported by Montgomery Watson at each of the sample locations. One notable exception was at sample location SB-08 where ERM-North Central observed wet grayish-black silt, but not enough moisture to collect a water sample.

Montgomery Watson encountered water in SB-08 at 2 feet BGS. A water sample was collected from the open borehole and analyzed for total (unfiltered) dissolved (filtered) RCRA metals (Table 5). This water is not subject to 35 IAC 620 ground water quality standards because the water was present in fill materials overlying the bedrock, which are not geologic materials.

4.2.2 *Analytical Summary*

Total metal results for borings SB-06, SB-07, SB-08, and SB-30 were compared with Taco Tier 1 soil remediation objectives for industrial/commercial properties and pH-specific soil remediation objectives for the soil component of ground water ingestion routes (Table 6). Arsenic levels above industrial/commercial ingestion pathway CUO are found in SB-07 and SB-30. Cadmium above construction worker ingestion and the soil component of ground water ingestion pathway CUO were detected in SB-30. Chromium exceeding industrial/commercial inhalation pathway CUO was found in SB-30. Lead results above industrial/commercial and construction worker ingestion pathway CUO of 400 mg/kg occurred in SB-06 and SB-30. Results above the soil component of ground water ingestion for nickel were detected in SB-06, SB-07, and SB-08. SB-30 had nickel levels exceeding soil component of ground water, industrial/commercial ingestion and inhalation, and construction worker ingestion CUO.

4.3 SWMU NO. 3 - SLUDGE STORAGE PAD

4.3.1 *Field Investigation Results*

In May and June 1995, Montgomery Watson advanced soil borings SB-12 and SB-13 in the sludge storage pad area. Reportedly, soils from the borings consisted of assorted fill material (i.e., silt, sand, gravel, and pieces of brick). Some gray and blue staining was observed at 1.5 feet BGS in boring SB-12. The auger could not be advanced at boring SB-12 because of auger refusal at approximately 2 to 2.5 feet BGS (Appendix A). Montgomery Watson recorded field-measured soil pH of 5.97 in SB-12 and 6.50 in SB-13 (Table 3). ERM-North Central collected samples adjacent to soil borings SB-12 and SB-13 in November and December 1996. Site conditions observed by ERM-North Central were similar to those reported by Montgomery Watson.

4.3.2 *Analytical Summary*

The analytical results indicate exceedances of Tier 1 values for arsenic, cadmium, and nickel (Table 7). Arsenic was detected above Tier 1 industrial/commercial ingestion pathway CUO in borings SB-12 and SB-13. Cadmium above the pH-specific soil component of ground water ingestion pathway CUO was found in SB-13. SB-12 and SB-13 had nickel levels above Tier 1 soil component of ground water ingestion pathway CUO. The nickel level in SB-13 was also above the Tier 1 construction worker ingestion pathway CUO.

4.4 SWMU NO. 4 - FORMER DRUM STORAGE AREA 1

4.4.1 *Field Investigation Results*

In May and June 1995, Montgomery Watson advanced five soil borings (SB-10, SB-11, and SB-14 through SB-16) within and around the perimeter of former drum storage area 1. Reportedly, soils in this area generally consisted of silt, sand, gravel, and small pieces of brick to approximately 2 feet BGS. Weathered bedrock, consisting of yellow-brown to black silt and small pieces of dolomite, was sampled to a depth of approximately 3 feet BGS, where the borings were terminated due to an inability to advance the auger or split-spoon (Appendix A). Montgomery Watson recorded field-measured soil pH that varied between 6.90 in SB-15 to 9.88 in SB-11 (Table 3). ERM-North Central collected samples adjacent to soil boring locations SB-10, SB-11, SB-14, SB-15, and SB-16 in November and December 1996. Site conditions observed by ERM-North Central were similar to those reported by Montgomery Watson.

4.4.2 *Analytical Summary*

Total metal concentrations were compared to TACO Tier 1 soil remediation objectives for industrial/commercial properties and pH-specific soil remediation objectives for the soil component of ground water ingestion route (Table 8). Arsenic levels in borings SB-10, SB-11, and SB-14 through SB-16 exceeded the Tier 1 industrial/commercial ingestion pathway CUO. Nickel concentrations detected in borings SB-10, SB-11, and SB-14 through SB-16 were above the soil component of ground water ingestion pathway CUO. The nickel level at SB-16 also exceeded Tier 1 construction worker ingestion CUO.

4.5 SWMU NO. 5 - RAIL CAR UNLOADING AREA

4.5.1 *Field Investigation Results*

In May and June 1995, Montgomery Watson advanced three borings (SB-17 through SB-19) near the rail car unloading area. Reportedly, samples consisted of a dark blue to black stained, silt, sand, and gravel. In boring SB-19, some weathered bedrock consisting of a yellow-brown silt and small pieces of dolomite were encountered at approximately 2.5 to 3 feet BGS. Montgomery Watson recorded field-measured soil pH that ranged from 7.07 in SB-18 to 7.52 in SB-7 (Table 3). Soil samples were collected directly from the auger flights due to obstructions caused by overhead electric utilities in the area. In November and December 1996, ERM-North Central collected additional soil samples adjacent to borings SB-17 through SB-19. ERM-North Central observed similar site conditions as reported by Montgomery Watson at each of the sample locations.

4.5.2 Analytical Summary

Total metal concentrations were compared to TACO Tier 1 soil remediation objectives for industrial/commercial properties and pH-specific soil remediation objectives for the soil component of ground water ingestion route (Table 9). Arsenic levels detected in borings SB-17, SB-18, and SB-19 exceeded the Tier 1 industrial/commercial ingestion pathway CUO. Chromium levels in boring SB-18 was detected above Tier 1 industrial/commercial inhalation pathway CUO.

4.6 SWMU NO. 6 - FERRIC CHLORIDE FILTER PRESS

4.6.1 Engineer's Inspection

The ferric chloride filter press area was inspected by an Illinois-Registered Professional Engineer. The engineer reportedly determined that there were cracks within the concrete floor of the containment structure of the filter press and identified locations for sample collection (SB-31 and SB-32).

4.6.2 Field Investigation Results

In May and June 1995, Montgomery Watson advanced two soil borings (SB-23 and SB-24) outside the ferric chloride filter press area. Reportedly, soil borings SB-31 and SB-32 were advanced over cracked areas within the concrete floor of the containment structure of the filter press.

Montgomery Watson reportedly attempted to collect a soil sample from the SB-23 location three times, but auger advancement was not possible at each attempt. Boring SB-24, located outside the east portion of the building, could not be accessed by a drill rig. Montgomery Watson attempted to install a hand auger boring in the area, but it could not be advanced below 8 to 10 inches due to the nature of the fill material (i.e., bricks) in the area (Appendix A). A field-measured soil pH of 6.95 was noted for SB-24 (Table 3).

Two concrete floors were encountered in soil borings SB-31 and SB-32, which were advanced within the ferric chloride filter press containment area. An orange-brown stained sand and gravel zone was encountered between the two floors. Beneath the second layer of concrete, fill material, consisting of sand, silt gravel, and bricks, was encountered to a depth of 3 feet BGS. A soil pH measurement of 8.88 was measured on a sample from SB-32 (the orange-brown stained sand and gravel zone, located between the two concrete floors) (Table 3). Montgomery Watson did not submit soil samples for TCLP analysis from either of these borings because the material between two concrete slabs was fill. In November and December 1996, ERM-North Central collected soil samples adjacent to borings SB-23,

SB-24, SB-31, and SB-32. Site conditions observed by ERM-North Central were similar to those reported by Montgomery Watson. Samples collected within the ferric chloride filter press containment area (SB-31 and SB-32) consisted of gravel subbase under the concrete floor.

4.6.3 *Analytical Summary*

Total metal concentrations were compared to TACO Tier 1 soil remediation objectives for industrial/commercial properties and pH-specific soil remediation objectives for the soil component of ground water ingestion route (Table 10). Arsenic was detected in SB-24 above Tier 1 industrial/commercial ingestion pathway CUO. Lead was detected above industrial/commercial and construction worker ingestion pathway CUO of 400 mg/kg at SB-24.

4.7 *SWMU NO. 7 - OUTSIDE DRUM STORAGE AREA 2*

4.7.1 *Field Investigation Results*

In May and June 1995, Montgomery Watson advanced soil borings SB-20 and SB-21 in the outside drum storage area 2. Reportedly, soil boring SB-22 was advanced inside the storage building. Materials encountered in borings SB-20 and SB-21 consisted of sand, gravel, and pieces of red brick to approximately 2 feet BGS, followed by yellow-brown silt gravel, silt, and pieces of weathered bedrock to 2.5 feet BGS (Appendix A). A field-measured soil pH ranged from 7.45 in SB-21 to 11.39 in SB-20 (Table 3).

Montgomery Watson encountered two concrete floors while advancing soil boring SB-22. Beneath the second floor, approximately 6 inches of pea gravel was identified above apparent native soils. Native soils, consisting of dark brown fine sand, silt, and some fine to coarse gravel, were sampled to a depth of 3 feet BGS (Appendix A). One soil sample was collected approximately 2.5 feet below the first concrete floor (SB-22). Sample SB-22 was taken from the native soils encountered below the second concrete floor. A soil pH measurement of 8.23 was observed in the native soils in soil boring SB-22 (Table 3). In November and December 1996, ERM-North Central collected soil samples adjacent to borings SB-20, SB-21, and SB-22. Site conditions observed by ERM-North Central were similar to those reported by Montgomery Watson.

4.7.2 *Analytical Summary*

Total metal concentrations were compared to TACO Tier 1 soil remediation objectives for industrial/commercial properties and pH-specific soil remediation objectives for the soil component of ground water ingestion route (Table 11). Arsenic results above Tier 1 industrial/commercial ingestion pathway CUO were found in SB-20 and

SB-22. Chromium was detected above Tier 1 industrial/commercial inhalation pathway CUO in boring SB-20. Lead was detected above Tier 1 industrial/commercial and construction worker ingestion pathway CUO in boring SB-22. Soil component of ground water ingestion pathway CUO for nickel was exceeded in boring SB-22.

4.8 SWMU NO. 8 - PROCESS SEWER SYSTEM

4.8.1 Field Investigation Results

In May and June 1995, Montgomery Watson advanced two soil borings (SB-25 and SB-26) at the opposite ends of the process sewer system.

Reportedly, soil boring SB-25, advanced near the north end of the system, was terminated at 1.5 feet BGS due to the presence of bedrock at that depth. At soil boring SB-26, sand, gravel, and pieces of brick were encountered to approximately 2 feet BGS. Dark yellow-brown silt, fine sand, and pieces of weathered bedrock were encountered at a depth of 4 feet BGS (Appendix A). The field-measured soil pH for sample from SB-26 was measured at 7.13 (Table 3). In November and December 1996, ERM-North Central collected additional soil samples from borings adjacent to SB-25 and SB-26. ERM-North Central observed similar site conditions as those reported by Montgomery Watson.

4.8.2 Analytical Results

Total metal concentrations were compared to TACO Tier 1 soil remediation objectives for industrial/commercial properties and pH-specific soil remediation objectives for the soil component of ground water ingestion route (Table 12). Arsenic levels above Tier 1 industrial/commercial ingestion pathway CUO were detected in SB-26. Nickel values above Tier 1 pH-specific soil component of ground water ingestion pathway CUO were found in SB-25 and SB-26.

4.9 SWMU NO. 9 - TRUCK UNLOADING AREA

4.9.1 Field Investigation Results

In May and June 1995, Montgomery Watson advanced three soil borings (SB-27, SB-28, and SB-29) in and around the perimeter of the truck unloading area. Reportedly, soil borings SB-27 and SB-29 were advanced at the east and west ends of the area, while soil boring SB-28 was advanced through the loading area. Materials encountered in the borings generally consisted of gravel and asphalt, followed by sand, silt, gravel, and brick fill material to the termination depth at each boring (Appendix A). Field-measured soil pH ranged from 6.75 in SB-29 to 9.10 in SB-28 (Table 3). ERM-North Central collected additional samples adjacent to

soil borings SB-27, SB-28, and SB-29, in November and December 1996. Site conditions observed by ERM-North Central were similar to those reported by Montgomery Watson.

4.9.2 *Analytical Results*

Total metal concentrations were compared to TACO Tier 1 soil remediation objectives for industrial/commercial properties and pH-specific soil remediation objectives for the soil component of ground water ingestion route (Table 13). Arsenic was detected in borings SB-28 and SB-29 above Tier 1 industrial/commercial ingestion pathway CUO. Nickel concentrations exceeded the Tier 1 pH-specific soil component of ground water ingestion pathway CUO at SB-29.

The Tier 1 soil remediation goal for lead is based on *Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities*, OSWER Directive No. 9355.4-12. The USEPA's Technical Review Workgroup for Lead has reviewed other methodologies used to assess risks associated with adult exposures to lead. Their findings have resulted in their issuance of *Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil*, dated December 1996. This document provides methodology and default parameters for calculating Alternate Lead Risk-Based Remediation Goals (RBRGs). A summary of the algorithms and default values used are presented in Table 14. Default values presented in the USEPA's document were used for all variables except those dependent on population. For these values, the mean of the three ethnic-based values were used. The proposed site-specific RBRG for lead is calculated to be 1,122 mg/kg.

The total concentrations of arsenic, barium, chromium, lead, mercury, nickel, selenium, and silver were compared with Tier 1 values for industrial/commercial sites and pH-specific Class I ground water for the migration to ground water pathway. The exceedances of these Tier 1 CUO is summarized in Table 15. Figure 4 shows all Tier 1 exceedances identified during this RCRA Phase I facility investigation. Arsenic levels exceed Tier 1 industrial/commercial ingestion pathway CUO in borings advanced in or around SWMU 1 through SWMU 9. Cadmium was detected above Tier 1 construction worker ingestion pathway CUO in the area of SWMU 2. Cadmium levels exceeding the Tier 1 pH-specific migration to ground water pathway CUO in the area of SWMU 1, SWMU 2, and SWMU 3.

Total chromium levels exceed Tier 1 industrial/commercial inhalation pathway CUO in the area of SWMU 2, SWMU 5, and SWMU 7. Analysis for hexavalent chromium was also run for several samples containing total chromium. Results indicate that there is little to no hexavalent chromium in the soil and that trivalent chromium is present. There are no exceedances of Tier 1 CUO for trivalent chromium at the site.

Lead concentrations exceeding the Tier 1 industrial/commercial and construction worker ingestion pathway CUO of 400 mg/kg, respectively, were detected in the areas of SWMU 2, SWMU 6, and SWMU 7. Based on the alternative CUO for lead presented in Section 5.0, exceedances occur in the areas of SWMU 2 and SWMU 7.

Nickel levels exceed Tier 1 industrial/commercial ingestion and inhalation, construction worker ingestion, and pH-specific migration to ground water pathway CUO in the area of SWMU 2. Nickel concentrations exceeding construction worker ingestion pathway CUO were detected in the areas of SWMU 2, SWMU 3, and SWMU 4. Nickel levels exceeding the migration to ground water pathway were detected in the areas of SWMU 1, SWMU 2, SWMU 3, SWMU 4, SWMU 7, SWMU 8, and SWMU 9.

Based on the evaluation of data collected during the Phase I RFI, the following areas of concern were identified:

- Total metal concentrations above Tier 1 industrial/commercial ingestion/inhalation pathway CUO in the areas of SWMU 1-SWMU 9.

- Total metal concentrations above Tier 1 construction worker ingestion pathway CUO in the areas of SWMU 2, SWMU 3, SWMU 4, SWMU 6, and SWMU 7.
- Total metal concentrations above Tier 1 migration to ground water pathway CUO in the area of SWMU 1, SWMU 2, SWMU 3, SWMU 4, SWMU 7, SWMU 8, and SWMU 9.

To address the contaminant concentrations on the site that exceed appropriate CUO, ERM-North Central will prepare a Phase II RFI Work Plan that will be submitted to IEPA for their review and comment. In general, the following issues will be reviewed in the Phase II RFI Work Plan:

- Further soil sampling to define the Tier 1 boundary for each SWMU.
- Possible installation of ground water monitoring wells to evaluate any impact to ground water from releases at the site.
- The feasibility of an engineered barrier to eliminate industrial/commercial ingestion and inhalation pathways.
- The feasibility of deed restriction in conjunction with health and safety plan to eliminate the construction worker ingestion pathway.
- The feasibility of deed restriction and/or local ordinances restricting use of ground water; thus, eliminating the migration to ground water pathway.

TABLES

TABLE 1

TOTAL INORGANIC SOIL ANALYTICAL RESULTS
PHIBRO-TECH, INC.
JOLIET, ILLINOIS
(Page 1 of 2)

SMWU No. Soil Boring Units	1 SB-01 mg/kg	1 SB-02 mg/kg	1 SB-03 mg/kg	1 SB-04 mg/kg	1 SB-05 mg/kg	2 SB-06 mg/kg	2 SB-07 mg/kg	2 SB-08 mg/kg	2 SB-30 mg/kg	3 SB-12 mg/kg	3 SB-13 mg/kg	4 SB-10 mg/kg	4 SB-11 mg/kg	4 SB-14 mg/kg	4 SB-15 mg/kg	4 SB-16 mg/kg	5 SB-17 mg/kg	5 SB-18 mg/kg	5 SB-19 mg/kg
Arsenic	4.66	14	6.1	14.3	6.15	ND	4.3	2.7	14	14	7.3	10.4	6.47	5.11	13.1	13	5.84	4.27	4.25
Barium	106	114	9.2	153	40.4	62	150	64	400	64	89	4.92	96.8	114	85	48	62.8	63.5	66.5
Cadmium	4.04	8.22	ND	16.5	5.91	3.3	7.2	5.4	270	7	84	5.41	6.14	4.85	11	0.65	5.96	4.59	5.6
Chromium	22	9.5	5.9	21.3	19.5	120	36	19	840	4.8	7.5	76.4	11	25.2	13	15	126	3100	99.4
Chromium (III)	NA	12	NA	NA	NA	NA	24	3100	8.3										
Chromium (VI)	NA	ND	NA	NA	NA	NA	ND	ND	ND										
Lead	207	148	11	390	80	1700	160	150	2200	250	34	7.85	47.2	25.9	54.1	120	42.6	72.6	35.1
Mercury	0.6	0.41	ND	1.54	0.32	1	1.8	0.48	2.6	ND	0.41	0.05	0.16	0.09	0.64	1.8	0.06	0.1	0.1
Nickel	220	1500	8.3	990	900	340	1200	950	46000	670	13000	1200	460	480	800	4800	16	81	18
Selenium	0.31	1.09	ND	0.79	0.3	ND	0.5	ND	1.3	ND	ND	0.94	0.52	0.46	0.84	ND	0.84	ND	0.31
Silver	ND	0.74	ND	ND															

Note:

All results expressed in mg/kg except TCLP Chromium which is expressed in mg/l.

Key:

SWMU = Solid waste management unit

TCLP = Toxicity Characteristic Leaching Procedure

NA = Not analyzed

ND = Not detected

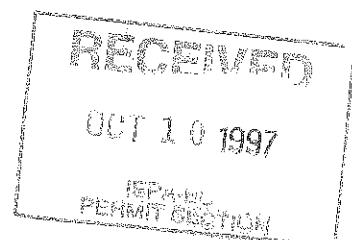


TABLE 1

TOTAL INORGANIC SOIL ANALYTICAL RESULTS
PHIBRO-TECH, INC.
JOLIET, ILLINOIS
(Page 2 of 2)

SMWU No. Soil Boring Units	6 SB-23 mg/kg	6 SB-24 mg/kg	6 SB-31 mg/kg	6 SB-32 mg/kg	7 SB-20 mg/kg	7 SB-21 mg/kg	7 SB-22 mg/kg	8 SB-26 mg/kg	9 SB-25 mg/kg	9 SB-27 mg/kg	9 SB-28 mg/kg	9 SB-29 mg/kg
Arsenic	NA	7.2	2.9	ND	3.94	2	7.65	19	1.5	0.37	3.75	10.8
Barium	NA	74	ND	18	34.3	221	36.8	400	15	101	42.8	75
Cadmium	NA	4.4	ND	ND	2.6	6.45	5.95	6.1	3.3	4.95	7.63	7.75
Chromium	NA	190	120	6.6	957	105	9.67	18	5.3	8.44	36.5	92
Chromium (III)	NA	NA	NA	NA	956	NA	NA	NA	NA	NA	NA	92
Chromium (VI)	NA	NA	NA	NA	1	ND	NA	NA	NA	NA	NA	ND
Lead	NA	420	19	7.6	124	141	417	310	6.5	47.7	121	61.3
Mercury	NA	0.68	ND	ND	0.56	0.16	0.16	1.5	ND	ND	0.34	0.08
Nickel	120	170	35	10	10	15	350	390	580	20	NA	390
Selenium	NA	ND	ND	0.47	0.41	2.31	0.47	2.9	ND	0.72	ND	0.39
Silver	NA	ND										

Note:

All results expressed in mg/kg except TCLP Chromium which is expressed in mg/l.

Key:

SWMU = Solid waste management unit

NA = Not analyzed

ND = Not detected

TABLE 2

TCLP INORGANIC SOIL ANALYTICAL RESULTS
PHIBRO-TECH, INC.
JOLIET, ILLINOIS
(Page 1 of 2)

SMWU No. Soil Boring Units	1 SB-01 mg/L	1 SB-02 mg/L	1 SB-03 mg/L	1 SB-04 mg/L	1 SB-05 mg/L	2 SB-06 mg/L	2 SB-07 mg/L	2 SB-08 mg/L	2 SB-30 mg/L	3 SB-12 mg/L	3 SB-13 mg/L	4 SB-10 mg/L	4 SB-11 mg/L	4 SB-14 mg/L	4 SB-15 mg/L	4 SB-16 mg/L	5 SB-17 mg/L	5 SB-17 DUP mg/L	5 SB-18 mg/L	5 SB-19 mg/L
Arsenic	ND	0.002	NA	0.001	ND	ND	0.005	ND	ND	ND	ND	ND	0.002	0.003	NA	0.004	0.007	0.001	0.005	
Barium	1.29	0.54	NA	0.24	0.31	0.1	0.32	0.30	0.17	0.78	0.43	0.54	0.84	0.79	0.71	NA	0.60	0.50	0.67	0.68
Cadmium	0.023	0.015	NA	0.029	0.034	0.044	0.041	0.009	0.077	0.022	0.070	0.047	0.016	0.028	0.039	NA	0.011	0.011	0.008	0.007
Chromium	0.01	ND	NA	ND	0.04	ND	ND	ND	NA	ND	ND	0.03	ND							
Lead	0.502	0.0780	NA	0.0070	0.0070	0.0070	0.205	1.39	0.0300	0.0250	0.0090	0.0170	0.0120	0.0140	0.0080	NA	0.0130	0.0070	0.0180	0.0060
Mercury	NA	NA	NA																	
Nickel	3.39	1.42	NA	7.75	1.62	3.55	0.50	0.95	5.82	2.95	7.96	5.92	4.49	17.8	4.58	NA	0.07	0.04	0.05	0.03
Selenium	ND	ND	NA	ND	NA	ND	ND	ND	ND											
Silver	0.01	ND	NA	ND	0.01	ND	ND	ND	ND	NA	ND	ND	ND	ND						

Key:

SWMU = Solid waste management unit

NA = Not analyzed

ND = Not detected

TABLE 2

TCLP INORGANIC SOIL ANALYTICAL RESULTS
PHIBRO-TECH, INC.
JOLIET, ILLINOIS
(Page 2 of 2)

SMWU No. Soil Boring Units	6 SB-23 mg/L	6 SB-24 mg/L	6 SB-31 mg/L	6 SB-32 mg/L	7 SB-20 mg/L	7 SB-21 mg/L	7 SB-22 mg/L	8 SB-26 mg/L	9 SB-25 mg/L	9 SB-27 mg/L	9 SB-27 DUP mg/L	9 SB-28 mg/L	9 SB-29 mg/L
Arsenic	NA	NA	NA	NA	0.001	ND	ND	0.002	NA	ND	ND	ND	ND
Barium	NA	NA	NA	NA	0.43	0.61	0.43	0.43	NA	1.54	1.29	0.32	0.22
Cadmium	NA	NA	NA	NA	0.012	0.009	ND	0.078	NA	0.018	0.009	0.019	0.020
Chromium	NA	NA	NA	NA	0.02	ND	ND	ND	NA	ND	ND	ND	ND
Lead	NA	NA	NA	NA	0.0230	0.0510	0.0970	0.0140	NA	0.0080	0.0060	0.0080	0.0040
Mercury	NA	NA	NA										
Nickel	NA	NA	NA	NA	1.16	0.16	ND	0.03	NA	0.54	1.12	0.32	0.30
Selenium	NA	NA	NA	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND
Silver	NA	NA	NA	NA	ND	ND	ND	ND	NA	ND	ND	ND	0.01

Key:

SWMU = Solid waste management unit

NA = Not analyzed

ND = Not detected

TABLE 3

**SUMMARY OF FIELD MEASURED SOIL pH DATA
PHIBRO-TECH, INC.
JOLIET, ILLINOIS**

SWMU No.	Soil Boring	pH
1	SB - 01	9.27
1	SB - 02	7.10
1	SB - 04	6.99
1	SB - 05	8.70
2	SB - 06	6.24
2	SB - 07	8.47
2	SB - 08	9.49
2	SB - 30	6.45
3	SB - 12	5.97
3	SB - 13	6.50
4	SB - 10	8.01
4	SB - 11	9.88
4	SB - 14	7.71
4	SB - 15	6.90
5	SB - 17	7.52
5	SB - 18	7.07
5	SB - 19	7.27
6	SB - 23	NA
6	SB - 24	6.95
6	SB - 31	NA
6	SB - 32	8.88
7	SB - 20	11.39
7	SB - 21	7.45
7	SB - 22	8.23
8	SB - 26	7.13
9	SB - 27	7.54
9	SB - 28	9.10
9	SB - 29	6.75
ALL	Average	7.81
ALL	Median	7.49
ALL	Geometric Mean	7.71

Note:

Missing data from SB - 16 and SB - 25 indicate field pH measurements were not taken.

TABLE 4

COMPARISON OF TOTAL METALS RESULTS TO TIER 1 CORRECTIVE ACTION OBJECTIVES
SOLID WASTE MANAGEMENT UNIT NO. 1
PHIBRO-TECH, INC.
JOLIET, ILLINOIS

Analytes	IEPA Tier 1 Corrective Action Objectives						Soil Boring Number	
	Industrial-Commercial		Construction Worker		Migration to Ground Water <i>mg/kg</i>	SB - 01 <i>mg/kg</i>		
	Ingestion <i>mg/kg</i>	Inhalation <i>mg/kg</i>	Ingestion <i>mg/kg</i>	Inhalation <i>mg/kg</i>				
Arsenic	3	1,200	61	25,000	29	4.66	14	
Barium	140,000	910,000	14,000	870,000	1,700	106	6.1	
Cadmium	2,000	2,800	200	59,000	11	4.04	8.22	
Chromium	10,000	420	4,100	8,800	No RBC	22	9.5	
Chromium (III)	1,000,000	No RBC	330,000	No RBC	No RBC	NA	NA	
Chromium (VI)	10,000	420	4,100	8,800	36	NA	NA	
Lead	400	No RBC	400	No RBC	No RBC	207	14.8	
Mercury	610	540,000	61	52,000	3.3	0.6	0.41	
Nickel	41,000	21,000	4,100	440,000	180	220	<i>1,500</i>	
Selenium	10,000	No RBC	1,000	No RBC	4.5	0.31	1.09	
Silver	10,000	No RBC	1,000	No RBC	13	ND	ND	

Key:

IEPA = Illinois Environmental Protection Agency

No RBC = No risk-based concentration established

ND = Not detected, below the detection limit

NA = Not analyzed

Italic Number = Above migration to ground water corrective action objective

Shading = Above ingestion/inhalation Tier 1 corrective action objective

TABLE 5

PERCHED WATER INORGANIC ANALYTICAL RESULTS
PHIBRO-TECH, INC.
JOLIET, ILLINOIS

<i>SMWU No. Soil Boring</i>	<i>2 SB-08 Unfiltered mg/L</i>	<i>2 SB-08 Filtered mg/L</i>
<i>Units</i>		
Arsenic	0.148	ND
Barium	3.36	0.05
Cadmium	0.0334	0.0005
Chromium	2.06	0.05
Chromium (III)	NA	NA
Chromium (VI)	NA	NA
Lead	32.8	ND
Mercury	NA	NA
Nickel	88.5	0.11
Selenium	0.018	ND
Silver	0.05	ND

Key:

SWMU = Solid waste management unit

NA = Not analyzed

ND = Not detected

TABLE 6

COMPARISON OF TOTAL METALS RESULTS TO TIER 1 CORRECTIVE ACTION OBJECTIVES
SOLID WASTE MANAGEMENT UNIT NO. 2
PHIBRO-TECH, INC.
JOLIET, ILLINOIS

Analytes	IEPA Tier 1 Corrective Action Objectives						<i>Soil Boring Number</i>
	<i>Industrial-Commercial</i>	<i>Inhalation</i>	<i>Construction Worker</i>	<i>Ingestion</i>	<i>Migration to Ground Water</i>	<i>mg/kg</i>	
Arsenic	<i>mg/kg</i>	<i>mg/kg</i>	<i>mg/kg</i>	<i>mg/kg</i>	<i>mg/kg</i>	<i>mg/kg</i>	<i>SB - 30 mg/kg</i>
Barium	3	1,200	61	25,000	29	ND	<i>SB - 08 mg/kg</i>
Cadmium	140,000	910,000	14,000	870,000	1,700	62	<i>SB - 07 mg/kg</i>
Chromium	2,000	2,800	200	59,000	11	3.3	<i>SB - 06 mg/kg</i>
Chromium (III)	10,000	420	4,100	8,800	No RBC	120	<i>SB - 05 mg/kg</i>
Chromium (VI)	1,000,000	No RBC	330,000	No RBC	No RBC	NA	<i>SB - 04 mg/kg</i>
Lead	10,000	420	4,100	8,800	36	NA	<i>SB - 03 mg/kg</i>
Mercury	400	No RBC	400	No RBC	No RBC	1700	<i>SB - 02 mg/kg</i>
Nickel	610	540,000	61	52,000	3.3	1	<i>SB - 01 mg/kg</i>
Selenium	41,000	21,000	4,100	440,000	180	340	<i>SB - 00 mg/kg</i>
Silver	10,000	No RBC	1,000	No RBC	4.5	ND	<i>SB - 00 mg/kg</i>
	10,000	No RBC	1,000	No RBC	13	ND	ND

Key:

IEPA = Illinois Environmental Protection Agency

No RBC = No risk-based concentration established

ND = Not detected, below the detection limit

NA = Not analyzed

Italic Number = Above migration to ground water corrective action objective
 Shading = Above ingestion/inhalation Tier 1 corrective action objective

TABLE 7

COMPARISON OF TOTAL METALS RESULTS TO TIER 1 CORRECTIVE ACTION OBJECTIVES
SOLID WASTE MANAGEMENT UNIT NO. 3
PHIBRO-TECH, INC.
JOLIET, ILLINOIS

Analytes	IEPA Tier 1 Corrective Action Objectives				Soil Borings	
	Industrial-Commercial Ingestion mg/kg	Inhalation mg/kg	Construction Worker Ingestion mg/kg	Inhalation mg/kg	Migration to Ground Water mg/kg	\$B - 12 mg/kg
Arsenic	3	1,200	61	25,000	29	14
Barium	140,000	910,000	14,000	870,000	1,700	64
Cadmium	2,000	2,800	200	59,000	11	7
Chromium	10,000	420	4,100	8,800	No RBC	4.8
Chromium (III)	1,000,000	No RBC	330,000	No RBC	No RBC	NA
Chromium (VI)	10,000	420	4,100	8,800	36	NA
Lead	400	No RBC	400	No RBC	No RBC	250
Mercury	610	540,000	61	52,000	3.3	ND
Nickel	41,000	21,000	4,100	440,000	180	670
Selenium	10,000	No RBC	1,000	No RBC	4.5	ND
Silver	10,000	No RBC	1,000	No RBC	13	ND

Key:

IEPA = Illinois Environmental Protection Agency

No RBC = No risk-based concentration established

ND = Not detected, below the detection limit

NA = Not analyzed

Italic Number = Above migration to ground water corrective action objective
Shading = Above ingestion/inhalation Tier 1 corrective action objective

TABLE 8

COMPARISON OF TOTAL METALS RESULTS TO TIER 1 CORRECTIVE ACTION OBJECTIVES
SOLID WASTE MANAGEMENT UNIT NO. 4
PHIBRO-TECH, INC.
JOLIET, ILLINOIS

Analytes	IEPA Tier 1 Corrective Action Objectives						Soil Boring Number			
	Industrial-Commercial Ingestion mg/kg	Inhalation mg/kg	Construction Worker Ingestion mg/kg	Inhalation mg/kg	Migration to Ground Water mg/kg	SB - 10 mg/kg	SB - 11 mg/kg	SB - 14 mg/kg	SB - 15 mg/kg	SB - 16 mg/kg
Arsenic	3	1,200	61	25,000	29	10.4	6.47	5.11	13.1	13
Barium	140,000	910,000	14,000	870,000	1,700	4.92	96.8	114	85	48
Cadmium	2,000	2,800	200	59,000	11	5.41	6.14	4.85	11	0.65
Chromium	10,000	420	4,100	8,800	No RBC	76.4	11	25.2	13	15
Chromium (III)	1,000,000	No RBC	330,000	No RBC	No RBC	12	NA	NA	NA	NA
Chromium (VI)	10,000	420	4,100	8,800	36	ND	NA	NA	NA	NA
Lead	400	No RBC	400	No RBC	No RBC	7.85	47.2	25.9	54.1	120
Mercury	610	540,000	61	52,000	3.3	0.05	0.16	0.09	0.64	1.8
Nickel	41,000	21,000	4,100	440,000	180	1200	460	480	800	4800
Selenium	10,000	No RBC	1,000	No RBC	4.5	0.94	0.52	0.46	0.84	ND
Silver	10,000	No RBC	1,000	No RBC	13	ND	ND	ND	ND	ND

Key:

IEPA = Illinois Environmental Protection Agency

No RBC = No risk-based concentration established

ND = Not detected, below the detection limit

NA = Not analyzed

Italic Number = Above migration to ground water corrective action objective
 Shading = Above ingestion/inhalation Tier 1 corrective action objective

TABLE 9

COMPARISON OF TOTAL METALS RESULTS TO TIER 1 CORRECTIVE ACTION OBJECTIVES
SOLID WASTE MANAGEMENT UNIT NO. 5
PHIBRO-TECH, INC.
JOLIET, ILLINOIS

Analytes	IEPA Tier 1 Corrective Action Objectives						Soil Boring Number mg/kg	
	Industrial-Commercial		Construction Worker		Migration to Ground Water			
	Ingestion mg/kg	Inhalation mg/kg	Ingestion mg/kg	Inhalation mg/kg	mg/kg	mg/kg		
Arsenic	3	1,200	61	25,000	29	<i>5.84</i>	<i>4.27</i>	
Barium	140,000	910,000	14,000	870,000	1,700	62.8	63.5	
Cadmium	2,000	2,800	200	59,000	11	<i>5.96</i>	<i>4.59</i>	
Chromium	10,000	420	4,100	8,800	No RBC	126	66.5	
Chromium (III)	1,000,000	No RBC	330,000	No RBC	No RBC	24	5.6	
Chromium (VI)	10,000	420	4,100	8,800	36	3100	99.4	
Lead	400	No RBC	400	No RBC	No RBC	ND	8.3	
Mercury	610	540,000	61	52,000	3.3	ND	ND	
Nickel	41,000	21,000	4,100	440,000	180	42.6	35.1	
Selenium	10,000	No RBC	1,000	No RBC	4.5	72.6	0.1	
Silver	10,000	No RBC	1,000	No RBC	13	0.06	0.1	
						ND	ND	
						ND	ND	

Key:

IEPA = Illinois Environmental Protection Agency

No RBC = No risk-based concentration established

ND = Not detected, below the detection limit

Italic Number = Above migration to ground water corrective action objective
Shading = Above ingestion/inhalation Tier 1 corrective action objective

TABLE 10

COMPARISON OF TOTAL METALS RESULTS TO TIER 1 CORRECTIVE ACTION OBJECTIVES
SOLID WASTE MANAGEMENT UNIT NO. 6
PHIBRO-TECH, INC.
JOLIET, ILLINOIS

Analytes	IEPA Tier 1 Corrective Action Objectives						Soil Boring Number		
	Industrial-Commercial		Construction Worker		Migration to Ground Water		SB - 23	SB - 24	SB - 31
	Ingestion mg/kg	Inhalation mg/kg	Ingestion mg/kg	Inhalation mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	3	1,200	61	25,000	29	NA	72	2.9	ND
Barium	140,000	910,000	14,000	870,000	1,700	NA	74	ND	18
Cadmium	2,000	2,800	200	59,000	11	NA	4.4	ND	ND
Chromium	10,000	420	4,100	8,800	No RBC	NA	190	120	6.6
Chromium (III)	1,000,000	No RBC	330,000	No RBC	No RBC	NA	NA	NA	NA
Chromium (VI)	10,000	420	4,100	8,800	No RBC	NA	NA	NA	NA
Lead	400	No RBC	400	No RBC	No RBC	NA	420	19	7.6
Mercury	610	540,000	61	52,000	3.3	NA	0.68	ND	ND
Nickel	41,000	21,000	4,100	440,000	180	120	170	35	10
Selenium	10,000	No RBC	1,000	No RBC	4.5	NA	ND	ND	0.47
Silver	10,000	No RBC	1,000	No RBC	13	NA	ND	ND	ND

Key:

IEPA = Illinois Environmental Protection Agency

No RBC = No risk-based concentration established

ND = Not detected, below the detection limit

NA = Not analyzed

Italic Number = Above migration to ground water corrective action objective
 Shading = Above ingestion/inhalation Tier 1 corrective action objective

TABLE 11

COMPARISON OF TOTAL METALS RESULTS TO TIER 1 CORRECTIVE ACTION OBJECTIVES
SOLID WASTE MANAGEMENT UNIT NO.7
PHIBRO-TECH, INC.
JOLIET, ILLINOIS

Analytes	IEPA Tier 1 Corrective Action Objectives						Soil Boring Number	
	Industrial-Commercial Ingestion mg/kg	Inhalation mg/kg	Construction Worker Ingestion mg/kg	Construction Worker Inhalation mg/kg	Migration to Ground Water mg/kg	SB - 20 mg/kg	SB - 21 mg/kg	SB - 22 mg/kg
Arsenic	3	1,200	61	25,000	29	3.94	2	7.65
Barium	140,000	910,000	14,000	870,000	1,700	34.3	221	36.8
Cadmium	2,000	2,800	200	59,000	11	2.6	6.45	5.95
Chromium	10,000	420	4,100	8,800	No RBC	957	105	9.67
Chromium (III)	1,000,000	No RBC	330,000	No RBC	No RBC	956	NA	NA
Chromium (VI)	10,000	420	4,100	8,800	36	1	ND	NA
Lead	400	No RBC	400	No RBC	No RBC	124	141	417
Mercury	610	540,000	61	52,000	3.3	0.56	0.16	0.16
Nickel	41,000	21,000	4,100	440,000	180	10	15	350
Selenium	10,000	No RBC	1,000	No RBC	4.5	0.41	2.31	0.47
Silver	10,000	No RBC	1,000	No RBC	13	ND	ND	ND

Key:

IEPA = Illinois Environmental Protection Agency

No RBC = No risk-based concentration established

ND = Not detected, below the detection limit

NA = Not analyzed

Italic Number = Above migration to ground water corrective action objective
 Shading = Above ingestion/inhalation Tier 1 corrective action objective

TABLE 12

COMPARISON OF TOTAL METALS RESULTS TO TIER 1 CORRECTIVE ACTION OBJECTIVES
SOLID WASTE MANAGEMENT UNIT NO. 8
PHIBRO-TECH, INC.
JOLIET, ILLINOIS

Analytes	IEPA Tier 1 Corrective Action Objectives						Soil Boring Number mg/kg	
	Industrial-Commercial		Construction Worker		Migration to Ground Water mg/kg			
	Ingestion mg/kg	Inhalation mg/kg	Ingestion mg/kg	Inhalation mg/kg	29	1.5		
Arsenic	3	1,200	61	25,000	29	1.5	19	
Barium	140,000	910,000	14,000	870,000	1,700	15	400	
Cadmium	2,000	2,800	200	59,000	11	3.3	6.1	
Chromium	10,000	420	4,100	8,800	No RBC	5.3	18	
Chromium (III)	1,000,000	No RBC	330,000	No RBC	No RBC	NA	NA	
Chromium (VI)	10,000	420	4,100	8,800	36	NA	NA	
Lead	400	No RBC	400	No RBC	No RBC	6.5	310	
Mercury	610	540,000	61	52,000	3.3	ND	1.5	
Nickel	41,000	21,000	4,100	440,000	180	580	390	
Selenium	10,000	No RBC	1,000	No RBC	4.5	ND	2.9	
Silver	10,000	No RBC	1,000	No RBC	13	ND	ND	

Key:

IEPA = Illinois Environmental Protection Agency

No RBC = No risk-based concentration established

ND = Not detected, below the detection limit

NA = Not analyzed

Italic Number = Above migration to ground water corrective action objective
Shading = Above ingestion/inhalation Tier 1 corrective action objective

TABLE 13

COMPARISON OF TOTAL METALS RESULTS TO TIER 1 CORRECTIVE ACTION OBJECTIVES
SOLID WASTE MANAGEMENT UNIT NO. 9
PHIBRO-TECH, INC.
JOLIET, ILLINOIS

Analytes	HEPA Tier 1 Corrective Action Objectives				Soil Boring Number	
	Industrial-Commercial Ingestion mg/kg	Inhalation mg/kg	Construction Worker Ingestion mg/kg	Migration to Ground Water mg/kg	SB - 27 mg/kg	SB - 28 mg/kg
Arsenic	3	1,200	61	25,000	29	0.37
Barium	140,000	910,000	14,000	870,000	1,700	101
Cadmium	2,000	2,800	200	59,000	11	4.95
Chromium	10,000	420	4,100	8,800	No RBC	8.44
Chromium (III)	1,000,000	No RBC	330,000	No RBC	No RBC	NA
Chromium (VI)	10,000	420	4,100	8,800	36	NA
Lead	400	No RBC	400	No RBC	No RBC	47.7
Mercury	610	540,000	61	52,000	3.3	ND
Nickel	41,000	21,000	4,100	440,000	180	20
Selenium	10,000	No RBC	1,000	No RBC	4.5	0.72
Silver	10,000	No RBC	1,000	No RBC	13	ND

Key:

IEPA = Illinois Environmental Protection Agency

No RBC = No risk-based concentration established

ND = Not detected, below the detection limit

NA = Not analyzed

Italic Number = Above migration to ground water corrective action objective
 Shading = Above ingestion/inhalation Tier 1 corrective action objective

TABLE 14

**ANALYSIS OF LEAD EXPOSURES
PHIBRO-TECH INCORPORATED
JOLIET, ILLINOIS**

		PbS * BKSF * IR _s * AF _s * EF _s		
Abbreviation	Model Parameter	Units		
PbB _{adult, central}	PbB _{adult, 0} + AT	µg/dL		
PbB _{adult, central}	Central estimate of blood lead concentrations in adults (i.e., women of child-bearing age) that have site exposures to soil lead at concentration, PbS	µg/dL		
PbB _{adult, 0}	Typical blood lead concentrations in adults (i.e., women of child-bearing age) in the absence of exposures to the site that is being assessed	µg/dL		
PbS	Soil lead concentration (appropriate average concentration for individual)	µg/g		
BKSF	Biokinetic slope factor relating (quasi-steady state) increase in typical adult blood lead concentration to average daily lead uptake (µg /dL blood lead increase per µg / day lead uptake)	µg/dL per µg/day		
IR _s	Intake rate of soil, including both outdoor soil and indoor soil-derived dust	g/day		
AF _s	Absolute gastrointestinal absorption fraction for ingested lead in soil and lead in dust derived from soil	Dimensionless		
EF _s	Exposure frequency for contact with assessed soils and/or dust derived in part from these soils (days of exposure during the averaging period)	days		
AT	Average time; the total period during which soil contact may occur	days		

TABLE 14

**ANALYSIS OF LEAD EXPOSURES
PHIBRO-TECH INCORPORATED
JOLIET, ILLINOIS**

(Page 2 of 3)

$$\text{PbB}_{\text{fetal, central}} = \text{PbB}_{\text{adult, central}} * (\text{GSD}_{i, \text{adult}})^{1.645} * R_{\text{fetal/maternal}}$$

$$\text{PbB}_{\text{fetal, 95, goal}}$$

$$= (\text{GSD}_{i, \text{adult}})^{1.645} * R_{\text{fetal/maternal}}$$

<i>Abbreviation</i>	<i>Model Parameter</i>	<i>Units</i>	<i>Default Value</i>	<i>Model Value</i>
PbB _{adult, central, goal}	Goal for central estimate of blood lead concentration in adults (i.e., women of child-bearing age) that have site exposures	µg/dL	—	Not Needed
PbB _{fetal, 95, goal}	Goal for the 95th percentile blood lead concentration among fetuses born to women having exposures to the specified site soil concentration	µg/dL	10	10
GSD _{i, adult}	Estimated value of the individual geometric standard deviation; the GSD among adults (i.e., women of child-bearing age) that have exposures to similar on-site lead concentrations, but that have non-uniform response (intake biokinetics) to site lead and non-uniform off-site lead exposures	Dimensionless	White = 1.89 Black = 1.98 Hispanic = 2.10	1.99
R _{fetal/maternal}	Constant of proportionality between fetal blood lead concentration at birth and maternal blood lead concentration	Dimensionless	0.9	0.9

TABLE 14

**ANALYSIS OF LEAD EXPOSURES
PHIBRO-TECH INCORPORATED
JOLIET, ILLINOIS**

(Page 3 of 3)

$$\text{RBRG} = \text{PbS} = \frac{(\text{PbB}_{\text{adult, central, goal}} - \text{PbB}_{\text{adult, 0}}) * \text{AT}}{(\text{BKSF} * \text{IR}_s * \text{AF}_s * \text{EF}_s)}$$

$$\text{RBRG} = \text{PbS} = \frac{\text{PbB}_{\text{adult, central, goal}} - \text{PbB}_{\text{adult, 0}} * \text{AT}}{(\text{BKSF} * \text{IR}_s * \text{AF}_s * \text{EF}_s)}$$

Abbreviation	Model Parameter	Units	Default Value	Model Value
RBRG	Risk-based remediation goals for nonresidential adult exposures to lead in soil	$\mu\text{g}/\text{g}$	To Be Determine	To Be Determine
PbB _{adult, central, goal}	$\text{PbB}_{\text{fetal, 0.95, goal}} = \frac{(\text{GSD}_{\text{l, adult}})^{1/645} * \text{R}_{\text{retal/material}}}{10 \mu\text{g}/\text{dL}}$			
PbB _{adult, central, goal}	$\text{PbB}_{\text{adult, central, goal}} = \frac{(1.99)^{1/645} * 0.9}{3.58 \mu\text{g}/\text{dL}}$			
RBRG = PbS	$\text{RBRG} = \text{PbS} = \frac{(\text{PbB}_{\text{adult, central, goal}} - \text{PbB}_{\text{adult, 0}}) * \text{AT}}{(\text{BKSF} * \text{IR}_s * \text{AF}_s * \text{EF}_s)}$			
RBRG = PbS	$\text{RBRG} = \text{PbS} = \frac{(3.58 - 1.97) \mu\text{g}/\text{dL} * 365 \text{ days}}{0.4 \frac{\mu\text{g}/\text{dL} * 0.05 \text{ g/day} * 0.12 * 219 \text{ days}}{\mu\text{g}/\text{day}}}$			
RBRG = PbS	$\text{RBRG} = \text{PbS} = 1,122 \mu\text{g/g} = 1,122 \text{ mg/kg}$			

TABLE 15

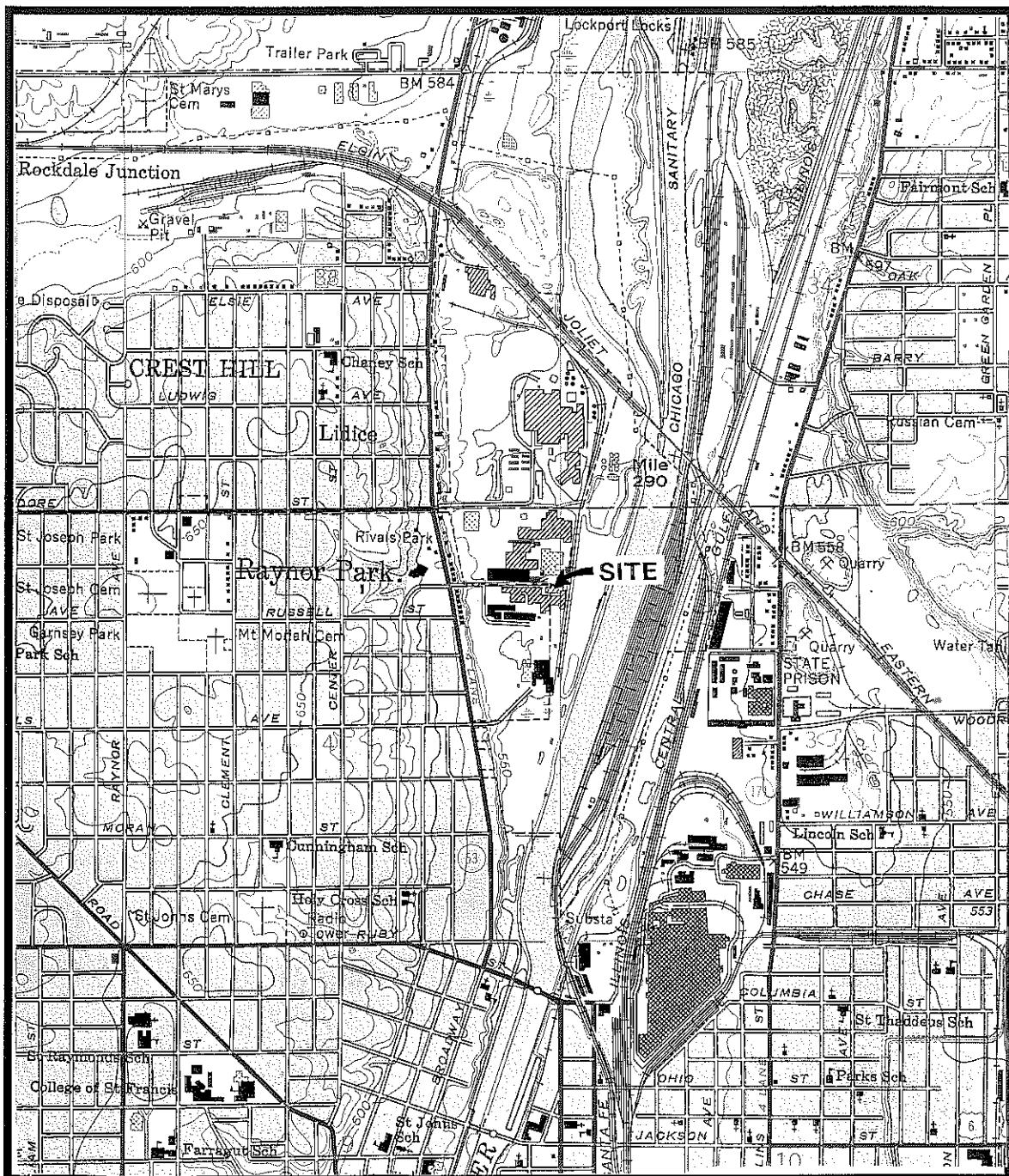
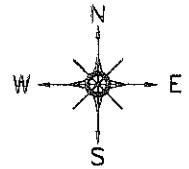
**EXCEEDANCES OF TIER 1 CUOS
SOLID WASTE MANAGEMENT UNIT NOs. 1 THROUGH 9
PHIBRO-TECH, INC.
JOLIET, ILLINOIS**

SWMU	IEPA Tier 1 Corrective Action Objectives				
	Industrial-Commercial		Construction Worker		Migration to Ground Water
	Ingestion	Inhalation	Ingestion	Inhalation	
1	Arsenic				Cadmium Nickel
2	Arsenic	Chromium	Cadmium		Cadmium
	Lead	Nickel	Lead		Nickel
3	Arsenic		Nickel		Cadmium Nickel
4	Arsenic		Nickel		Nickel
5	Arsenic	Chromium			
6	Arsenic Lead		Lead		
7	Arsenic Lead	Chromium	Lead		Nickel
8	Arsenic				Nickel
9	Arsenic				Nickel

FIGURES

28

JOLIET QUADRANGLE
ILLINOIS
7.5 MINUTE SERIES (TOPOGRAPHIC)
1962
PHOTOREVISED 1973



SCALE 1:24000
 1 .5 0 1 MILE

CONTOUR INTERVAL 10 FEET



* QUADRANGLE LOCATION

DATE 3/22/96
 DRAWN DMP
 FILE K:\CPTFILES\ERM\PTI\95237\ACAD\FIG1A.DWG

TOWNSHIP T35N
 RANGE R10E
 SECTION 4

FIGURE 1
SITE LOCATION MAP
PHIBRO TECH INC.
JOLIET, ILLINOIS



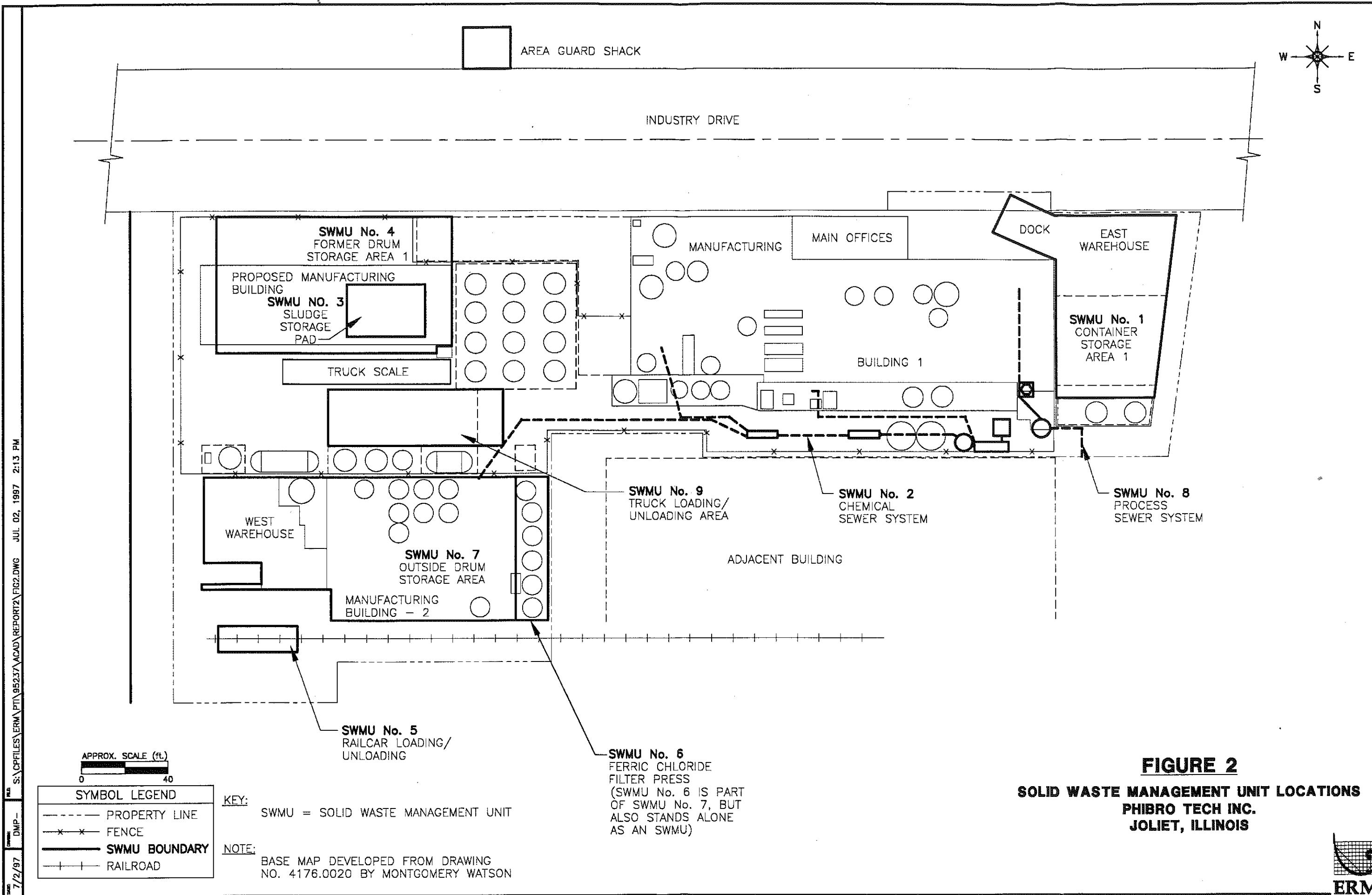
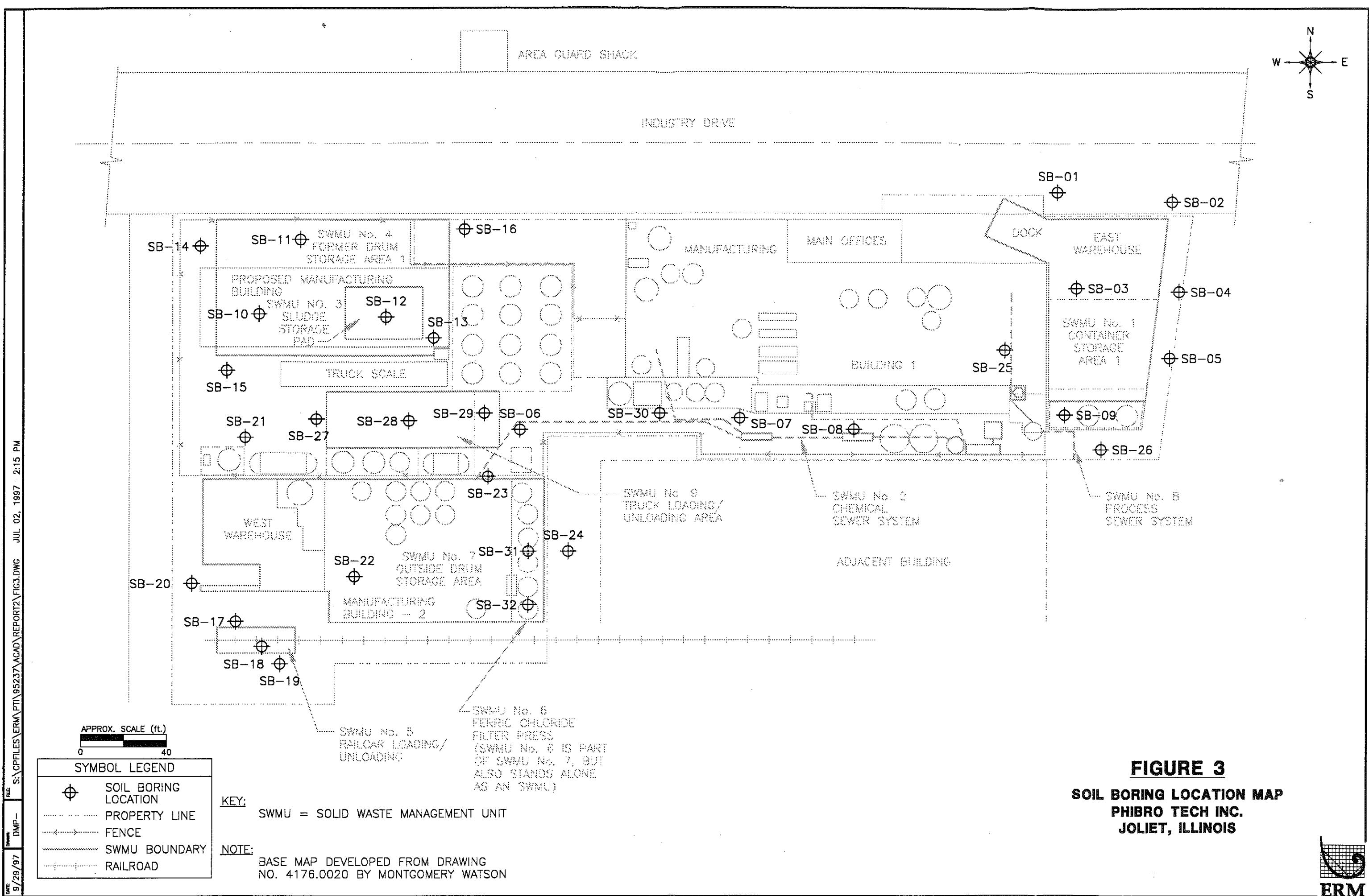
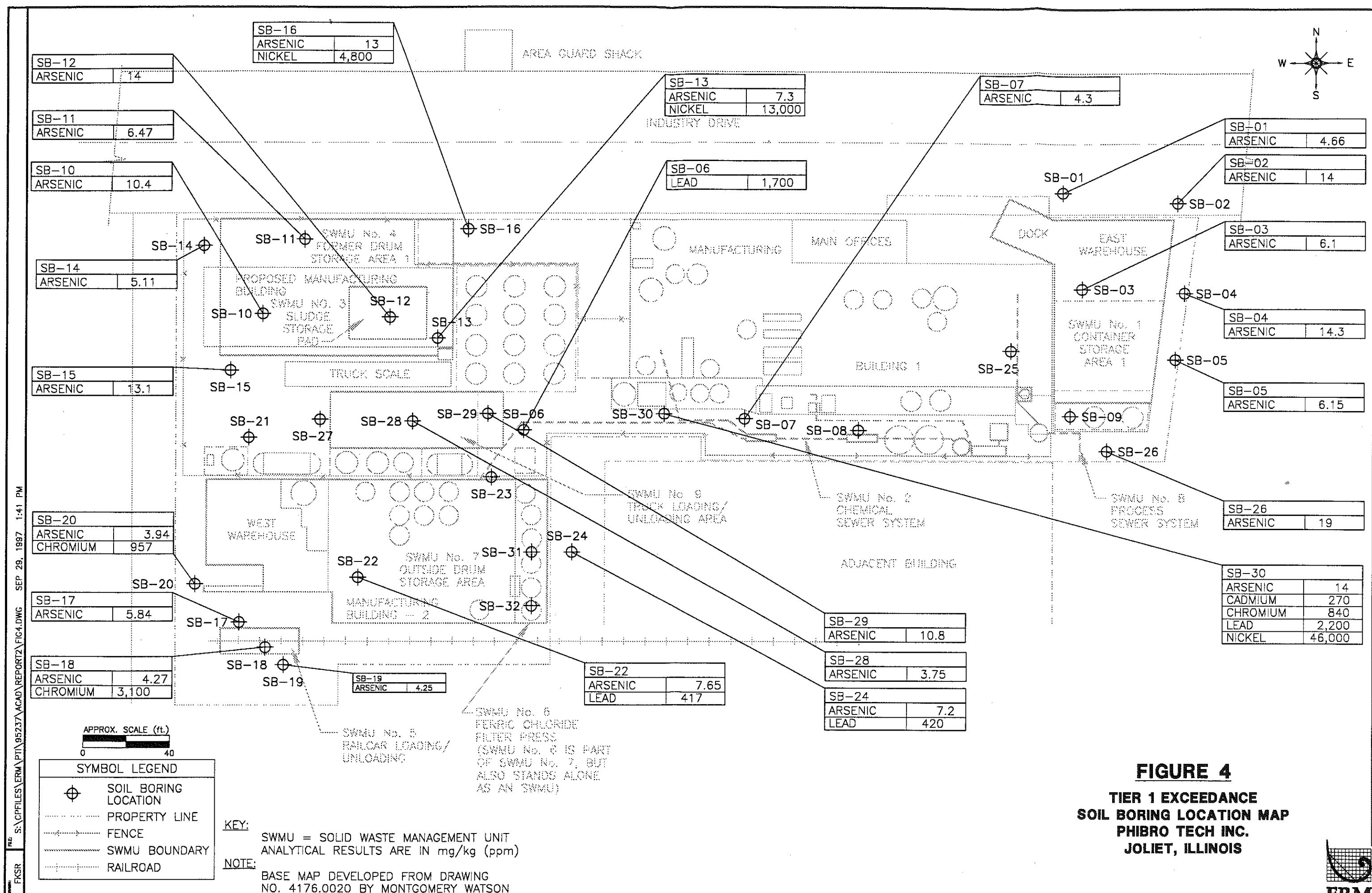


FIGURE 2

SOLID WASTE MANAGEMENT UNIT LOCATIONS
PHIBRO TECH INC.
JOLIET, ILLINOIS







APPENDIX A

MONTGOMERY WATSON INVESTIGATION

PROTOCOL FOR SPLIT-SPOON SAMPLING OF SUBSURFACE SOILS

Subsurface soil samples are collected by performing soil borings at selected locations at the site. Soil borings are performed using hollow stem auger (HSA) and split-spoon sampling techniques. Soil samples are collected at 2.5 foot intervals from 0 to 10 feet, and at 5 feet intervals thereafter to the borehole bottom, in accordance with American Society of Testing and Materials (ASTM) standards (ASTM:D 1586-84). A standard 2-inch OD split-spoon sampler is used for collection of soil samples. The drilling is directed by Montgomery Watson's Site Geologist, who logs geologic materials encountered during drilling, field screens auger cuttings and soil samples, and observes the drilling activities and supervises sample collection.

As samples are obtained in the field, they are visually classified by Montgomery Watson's Site Geologist in accordance with ASTM:D 2488-84. Sample lithology is recorded using the Unified Soil Classification System. Soil boring logs, documenting soil types and subsurface conditions, are completed by Montgomery Watson's site representative. Actual borehole depth and selection of soil samples for analysis are based upon instrument screening, visual observation and odor.

Drill cuttings and liquids generated are left at the borehole. When required by site conditions, these spoils are contained in 55-gallon, steel drums. When completed, borings are backfilled with bentonite cement mixed with cuttings. The split-spoon sampler is cleaned between samples to minimize cross contamination. The cleaning procedure consists of a soap and water or trisodium phosphate (TSP) wash, followed by a triple rinse with deionized or distilled water. To avoid cross contamination between soil borings, drilling augers are steam cleaned between holes.

In accordance with Montgomery Watson's Site Safety Plan, a photoionization detector (PID) and explosimeter are used to monitor ambient air concentrations at the borehole and within the work zone during drilling. The PID is also used for field screening soil samples for the presence of volatile organic compounds. Personal protective equipment is utilized by site personnel during performance of sampling activities, as specified in the Site Safety Plan. Soil samples are placed in laboratory-cleaned glass jars and labelled, identifying sample number, location and date, and sampling personnel. Samples submitted for analysis are preserved on ice and shipped in a cooler overnight to Montgomery Watson's analytical laboratory in Madison, Wisconsin. Montgomery Watson standard chain of custody procedures are followed regarding shipment and receipt of samples.

PROTOCOL FOR AUGER PROBE SAMPLING OF SUBSURFACE SOILS

Subsurface soils are collected by performing auger probes at selected locations at the site. The auger probes are performed by advancing solid stem augers to a desired depth, allowing the soils to be collected onto the auger flights. The augers are then removed from the borehole, and the soils are removed from the auger flights utilizing stainless steel tools for sample collection. ~~The drilling is directed by a Montgomery Watson Site Geologist, who logs geologic materials encountered during drilling, field screens auger cuttings and soil samples, and observes the drilling activities and supervises sample collection.~~

As samples are obtained in the field, they are visually classified by Montgomery Watson's Site Geologist in accordance with ASTM:D 2488-84. Sample lithology is recorded using the Unified Soil Classification System. Auger probe logs, documenting soil types and subsurface conditions, are completed by Montgomery Watson's site representative. Actual borehole depth and selection of soil samples for analysis are based upon instrument screening, visual observation and odor.

Drill cuttings and liquids generated are left at the borehole. When required by site conditions, these spoils are contained in 55-gallon, steel drums. When completed, borings are backfilled with bentonite cement mixed with cuttings. The stainless steel sampling tool is cleaned between samples to minimize cross contamination. The cleaning procedure consists of a soap and water or trisodium phosphate (TSP) wash, followed by a triple rinse with deionized or distilled water. To avoid cross contamination between auger probes, drilling augers are steam cleaned between holes.

In accordance with Montgomery Watson's Site Safety Plan, a photoionization detector (PID) and explosimeter are used to monitor ambient air concentrations at the borehole and within the work zone during drilling. The PID is also used for field screening soil samples for the presence of volatile organic compounds. Personal protective equipment is utilized by site personnel during performance of sampling activities, as specified in the Site Safety Plan.

Soil samples are placed in laboratory-cleaned glass jars and labelled, identifying sample number, location and date, and sampling personnel. Samples submitted for analysis are preserved on ice and shipped in a cooler overnight to Montgomery Watson's analytical laboratory in Madison, Wisconsin. Montgomery Watson standard chain of custody procedures are followed regarding shipment and receipt of samples.

Soil and water samples are placed in laboratory-cleaned glass jars and labeled, identifying sample number, location and date, and sampling personnel. Samples submitted for analysis are preserved on ice and shipped in a cooler overnight to Montgomery Watson's analytical laboratory in Madison, Wisconsin. Montgomery Watson standard chain of custody procedures are followed regarding shipment and receipt of samples.

[ASSESS PROTOCOL GEOPROBE]

PROTOCOL FOR HAND AUGER SAMPLING OF SHALLOW SURFACE SOILS

Surface soil sampling is performed using a stainless-steel soil auger with stainless-steel extension handles. As samples are collected, they are visually observed for soil type according to American Society of Testing and Materials (ASTM) standards (ASTM:D 2488-84) and the presence of unusual characteristics or staining potentially indicative of contamination. Similarly, soils are screened for the presence of volatile organic compounds (VOCs) using a photoionization detector (PID). VOCs are common components of a variety of environmental contaminants, including industrial solvents, petroleum products and a wide range of other industrial compounds.

The PID is also used to monitor ambient air concentrations at the borehole and within the work zone during the hand auger sampling, in accordance with Montgomery Watson's Site Safety Plan. Personal protective equipment is utilized by sampling personnel, as specified in the Site Safety Plan.

To avoid cross contamination, the auger bucket and handles are decontaminated prior to initial use at the site and between sampling locations. This procedure includes a soap and water or trisodium phosphate (TSP) wash, followed by a triple distilled or deionized water rinse. Samples are transferred from the bucket auger to laboratory-clean, glass sample jars and labelled with the sample designation, location, date and sampler. Collected samples are preserved on ice and shipped to Montgomery Watson's Analytical Laboratory in Madison, Wisconsin. Montgomery Watson standard chain-of-custody procedures are followed regarding the shipment and receipt of samples.

Displaced soils generated during the sampling procedure are returned to the borehole to avoid distribution to other surface areas.

[Assess PROTOCOL 79]
March 1993



LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #1 - Container Storage Area 1
Location Joliet, Illinois

Boring No. SB01
Surface Elevation _____
Job No. 4176.0020
Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES			
No.	Type	Rec. (in.)	Moisture	N Value		qu (qa) (tsf)	PID (ppm)	pH	
1	10	M	50/2"		Gray Gravel (FILL)				
					Black Silt, The Sand and Gravel (FILL)				
2	3	M	20"		Black/Dark Brown Silty Sand and Gravel			0.0	9
					Bedrock at 4.0 ft				
					End of Boring at 4.0 ft Backfilled with Bentonite Chips				
					5				
					10				

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start	5/25/95	End	5/25/95
Driller	RSDC	Chief	LW
Logger	DAP	Editor	PMS
Drill Method	2 3/4" I.D. HSA		

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

ID: PG-JKP



LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #1 - Container Storage Area 1
Location Joliet, Illinois

Boring No. **SB02**
Surface Elevation _____
Job No. **4176.0020**
Sheet **1** of **1**

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

WATER LEVEL OBSERVATIONS

GENERAL NOTES

Idle Drilling ft. Upon Completion of Drilling ft.
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

Start 5/24/95 End 5/24/95
Driller RSDC Chief LW Rig Acker
Logger DAP Editor PMS
Drill Method 2 3/4" LD. HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



**MONTGOMERY
WATSON**



LOG OF TEST BORING

Project Phibro Tech Inc.
Location SWMU #1 - Container Storage Area 1
Location Joliet, Illinois

2100 Corporate Drive, Addison, Illinois 60101. TEL. (708) 691-5000

Boring No. **SB03**
Surface Elevation
Job No. **4176.0020**
Sheet **1** of **1**

WATER LEVEL OBSERVATIONS

File Drilling ft. Upon Completion of Drilling
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

GENERAL NOTES

Start	6/3/95	End	6/3/95	
Driller	RSDC	Chief	LW	Rig Acker
Logger	DAP	Editor	PMS	
Drill Method	2 3/4" I.D.	HSA		

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

**MONTGOMERY
WATSON**



LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #1 - Container Storage Area 1
Location Joliet, Illinois

Boring No. SB04
Surface Elevation _____
Job No. 4176.0020
Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES			
No.	Moisture (in.)	Rec. (in.)	Mois- ture	N Value	Depth (ft.)	qu (qa) (tsf)	PID (ppm)	pH		
1	14	M	12			Gravel and Brick (FILL)				
						Grayish Brown Silt, Pieces of Brick and Small Gravel (FILL)				
2		M				Yellowish Brown Silt (FILL)				
						Split Spoon Refusal at 3.5 Feet. Possible Bedrock				
						End of Boring at 3.5 ft Backfilled with Bentonite Chips	16.0	7		
						5				
						10				

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

GENERAL NOTES

Start 5/24/95 End 5/24/95
Driller RSDC Chief LW Rig Acker
Logger DAP Editor PMS
Drill Method 2 3/4" I.D. HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

ID-PS-JKP

**MONTGOMERY
WATSON**



LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #1 - Container Storage Area 1
Location Joliet, Illinois

Boring No. SB05
Surface Elevation _____
Job No. 4176.0020
Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES			
No.	V P E	Rec. (in.)	Moisture	N Value	Depth (ft.)	qu (qa) (tsf)	PID (ppm)	pH		
1		8	W	10		Brown Silty Foundation, Pieces of Brick (FILL)				
2			W	41/0"		Dark Brown Silt (FILL)		0.0	9	
						Split Spoon Refusal - Possible Bedrock at 4 Feet				
					5	End of Boring at 4.0 ft Backfilled with Bentonite Chips				
					10					

WATER LEVEL OBSERVATIONS

Time Drilling 5:00 PM ft. Upon Completion of Drilling 5:24 PM ft.
Time After Drilling _____ ft.
Depth to Water _____ ft.
Depth to Cave in _____ ft.

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start Date	<u>5/24/95</u>	End Date	<u>5/24/95</u>
Driller	<u>RSDC</u>	Chief Editor	<u>LW</u>
Logger	<u>DAP</u>	Editor	<u>PMS</u>
Drill Method	<u>2 3/4" I.D. HSA</u>		

ID: PS-JKP



LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #2 - Chemical Sewer System
Location Joliet, Illinois

Boring No. **SB06**
Surface Elevation _____
Job No. **4176.0020**
Sheet **1** of **1**

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE				VISUAL CLASSIFICATION and Remarks			SOIL PROPERTIES			
No.	Rec. (in.)	Mois- ture	N Value	Depth (ft.)			qu (qa) (tsf)	PID (ppm)	pH	
1					Light Gray Gravel (FILL)					
					Gray Gravel and Sand (FILL)					
					Black SILT, Trace Clay, Pieces of Weathered Bedrock (ML)		0.0	6		
					Auger Refusal at 2.5 Feet					
					End of Boring at 2.5 ft Backfilled with Bentonite Chips					
				5						
				10						

WATER LEVEL OBSERVATIONS

Time After Drilling ft. Upon Completion of Drilling ft.
Depth to Water ft. Depth to Cave in ft.

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 6/5/95 End 6/5/95
Driller RSDC Chief LW Rig Skid
Logger DAP Editor PMS
Drill Method 2 3/4" I.D. HSA



LOG OF TEST BORING

Project Phibro Tech Inc.
 SWMU #2 - Chemical Sewer System
 Location Joliet, Illinois

Boring No. SB07
 Surface Elevation _____
 Job No. 4176.0020
 Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Y P E	Rec. (in.)	Mois- ture	N Value		Depth (ft.)	qu (qa) (tsf)	PID (ppm)	pH	
					Asphalt and Gravel (FILL)					
1		M/W			Gray Sand and Silt, Pieces of Red Brick (FILL)					
					Dark Reddish-Brown Silt, Sand and Gravel, Pieces of Brick (FILL)		0.0	9		
					Auger Refusal at 3.2 Feet					
					End of Boring at 3.2 ft Backfilled with Bentonite Chips					
					5					
					10					

WATER LEVEL OBSERVATIONS

While Drilling ∇ 2.0 ft. Upon Completion of Drilling ∇ ft.
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start 6/5/95 End 6/5/95
 Driller RSDC Chief LW Rig Skid
 Logger DAP Editor PMS
 Drill Method 2 3/4" I.D. HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

ID: PS-KP



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LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #2 - Chemical Sewer System
Location Joliet, Illinois

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

Boring No. **SB08**
Surface Elevation
Job No. **4176.0020**
Sheet **1** of **1**

SAMPLE					VISUAL CLASSIFICATION and Remarks			SOIL PROPERTIES			
No.	Rec. (in.)	Mois- ture	N Value	Depth (ft.)				qu (qa) (tsf)	PID (ppm)	pH	
					Asphalt and Gravel (FILL)						
1	4	M			Gray Gravel, Pieces of Red Brick (FILL)			0.0	0		
2		M/W			Brown Sand and Gravel, Pieces of Brick (FILL)			0.0	10		
					Auger Refusal						
					End of Boring at 3.0 ft Backfilled with Bentonite Chips						
				5							
				10							

WATER LEVEL OBSERVATIONS

Wire Drilling ft. Upon Completion of Drilling ft.
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start	<u>6/5/95</u>	End	<u>6/5/95</u>	
Driller	RSDC	Chief	LW	Rig Skid
Logger	DAP	Editor	PMS	
Drill Method	2 3/4" I.D. HSA			

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LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #4 - Former Drum Storage Area 1
Location Joliet, Illinois

Boring No. SB10
Surface Elevation _____
Job No. 4176.0020
Sheet 1 of 1

2100 Corporate Drive; Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES			
No.	Y P E	Rec. (in.)	Mois- ture	N Value	Depth (ft.)	qu (qa) (tsf)	PID (ppm)	pH		
1		14	M	24		Gray Gravel (FILL)			0.0	
2		6	M	20"		Yellow Brown Gravel, Silt and Fine Sand (FILL)			0.0	8
						Black/Yellow Silt, Fine Sand and Gravel				
						Bedrock at 4 Feet				
						End of Boring at 4.0 ft Backfilled with Bentonite Chips				
						5				
						10				

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start Date	<u>5/24/95</u>	End Date	<u>5/24/95</u>
Driller	<u>RSDC</u>	Chief Editor	<u>LW</u>
Logger	<u>DAP</u>	Editor	<u>PMS</u>
Drill Method	<u>2 3/4" I.D. HSA</u>		

Rig Acker



LOG OF TEST BORING

Project **Phibro Tech Inc.**
Location **SWMU #4 - Former Drum Storage Area 1**

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

Boring No. **SB11**
Surface Elevation _____
Job No. **4176.0020**
Sheet **1** of **1**

SAMPLE					VISUAL CLASSIFICATION and Remarks			SOIL PROPERTIES		
No.	M P E	Rec. (in.)	Mois- ture	N Value	Depth (ft.)		qu (qa) (tsf)	PID (ppm)	pH	
						Gray Gravel (FILL)				
1		10	M	26		Brown to Dark Brown Silt, Sand and Gravel (FILL)				
						Bedrock at 3.0 ft		0.0	10	
						End of Boring at 3.0 ft Backfilled with Bentonite Chips				
					5					
					10					

WATER LEVEL OBSERVATIONS

Time After Drilling _____ ft. Upon Completion of Drilling _____ ft.
Depth to Water _____ ft. Depth to Cave in _____ ft.

Start	<u>5/24/95</u>	End	<u>5/24/95</u>
Driller	RSDC	Chief	LW
Logger	DAP	Editor	PMS
Drill Method	<u>2 3/4" I.D. HSA</u>		

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



LOG OF TEST BORING

Project Phibro Tech Inc.
 SWMU #3 - Sludge Storage Pad
 Location Joliet, Illinois

Boring No. SB12
 Surface Elevation _____
 Job No. 4176.0020
 Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	MP (in.)	Rec. (in.)	Mois- ture	N Value		Depth (ft.)	qu (qa) (tsf)	PID (ppm)	pH	
1	14	M	35"		Gray and Brown Gravel, Pieces of Brick (FILL)					
					Light Tan/Brown Silt and Fine Sand (FILL)					
					Brown, Gray and Blue Stained Sand, Gravel and Silt (FILL)		0.0	6		
					End of Boring at 3.0 ft Backfilled with Bentonite Chips					
					5					
					10					

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start	5/24/95	End	5/24/95
Driller	RSDC	Chief	LW Rig Acker
Logger	DAP	Editor	PMS
Drill Method	2 3/4" I.D. HSA		

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



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LOG OF TEST BORING

Project **Phibro Tech Inc.**
..... **SWMU #3 - Sludge Storage Pad**
Location **Joliet, Illinois**

Boring No. **SB13**
Surface Elevation _____
Job No. **4176.0020**
Sheet **1** of **1**

2100 Corporate Drive, Addison, Illinois 60101, TEL (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks			SOIL PROPERTIES			
No.	Type	Rec. (in.)	Mois- ture	N Value	Depth (ft.)			qu (qa) (tsf)	PID (ppm)		
1		10	M/W	62		Gray and Brown Gravel (FILL)					
						CONCRETE					
						Gray Sand, Gravel, Silt and Pieces of Brick (FILL)					
						Black SILT with Pieces of Yellow Dolomite (ML)					
						Possible Bedrock at 2.5 ft					
						Auger Refusal and End of Boring at 2.5 ft					
					5						
					10						

WATER LEVEL OBSERVATIONS

File Drilling ft. Upon Completion of Drilling
Time After Drilling _____ Depth to Water _____
Depth to Cave in _____

Start 5/24/95 End 5/24/95
Driller RSDC Chief LW Rig Acker
Logger DAP Editor PMS
Drill Method 2 3/4" I.D. HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



LOG OF TEST BORING

Project **Phibro Tech Inc.**

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Location Joliet, Illinois

Boring No. SB13

Surface Elevation

Job No. 4176.0020

Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

WATER LEVEL OBSERVATIONS

GENERAL NOTES

While Drilling ft. Upon Completion of Drilling ft
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

Begin 5/24/95 End 5/24/95
Driller RSDC Chief LW Rig
Logger DAP Editor _____
Drill Method 2 3/4" I.D. HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



LOG OF TEST BORING

Project Phibro Tech Inc.
Location SWMU #3 - Sludge Storage Pad
Location Joliet, Illinois

Boring No. **SB14**
Surface Elevation _____
Job No. **4176.0020**
Sheet **1** of **1**

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks			SOIL PROPERTIES		
No.	Type	Rec. (in.)	Mois- ture	N Value	Depth (ft.)		qu (qa) (tsf)	PID (ppm)	pH	
						Gravel Surface Gray Sand and Gravel (FILL)				
1		12	M	50/0"		Brown to Black Sand, Gravel, Pieces of Red Brick (FILL)				
						Yellowish-Brown Gravel Interbedded with Black Silt, Possible Weathered Bedrock (FILL)		0.0	8	
						End of Boring at 2.5 ft Backfilled with Bentonite Chips				
					5					
					10					

WATER LEVEL OBSERVATIONS

ile Drilling ft. Upon Completion of Drilling f
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/24/95 End 5/24/95
Driller RSDC Chief LW Rig Acker
Logger DAP Editor PMS
Drill Method 2 3/4" I.D. HSA

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LOG OF TEST BORING

Project **Phibro Tech Inc.**
SWMU #4 - Former Drum Storage Area 1
 Location **Joliet, Illinois**

Boring No. **SB15**
 Surface Elevation _____
 Job No. **4176.0020**
 Sheet **1 of 1**

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES			
No.	V P E	Rec. (in.)	Mois- ture	N Value		qu (qa) (tsf)	PID (ppm)	pH	
1		18	M	51	Gray Gravel (FILL)				
					Black Sand, Silt and Gravel, Pieces of Wood and Brick (FILL)				
					Some Yellowish Gravel from 2.4 to 2.5 ft	0.0	7		
					End of Boring at 3.0 ft Backfilled with Bentonite Chips				
					5				
					10				
WATER LEVEL OBSERVATIONS						GENERAL NOTES			
While Drilling	▽	ft.	Upon Completion of Drilling	▼	ft.	Start Driller	5/24/95 RSDC	End Chief	5/24/95 LW Rig Acker
Time After Drilling	_____	_____	_____	_____	_____	Logger	DAP	Editor	PMS
Depth to Water	_____	_____	_____	_____	_____	Drill Method	2 3/4"	I.D.	HSA
Depth to Cave in	_____	_____	_____	_____	_____				
The stratification lines represent the approximate boundary between soil types and the transition may be gradual.						ID:PS-JP			



LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #4 - Former Drum Storage Area 1
Location Joliet, Illinois

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

WATER LEVEL OBSERVATIONS

Idle Drilling ft. Upon Completion of Drilling ft.
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start	5/24/95	End	5/24/95	
Driller	RSDC	Chief	LW	Rig Acker
Logger	DAP	Editor	PMS	
Drill Method	2 3/4" I.D. HSA			

**MONTGOMERY
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LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #5 - Rail Car Unloading Area
Location Joliet, Illinois

Boring No. **SB17**
Surface Elevation _____
Job No. **4176.0020**
Sheet **1** of **1**

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks			SOIL PROPERTIES		
No.	Y D	Rec. (in.)	Mois- ture	N Value	Depth (ft.)	Blackish Blue Stained Brown Silt, Gravel and Sand (FILL)	Creosote Odor	qu (qa) (tsf)	PID (ppm)	pH
					-					
					5	End of Boring at 2.5 ft Backfilled with Bentonite Chips		18.6	8	
					10					

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/25/95** End **5/25/95**
Driller **RSDC** Chief **LW** Rig Acker
Logger **DAP** Editor **PMS**
Drill Method **2 3/4" I.D. HSA**

ID: PSJKP



LOG OF TEST BORING

Project Phibro Tech Inc.
 SWMU #5 - Rail Car Unloading Area
 Location Joliet, Illinois

Boring No. SB18
 Surface Elevation
 Job No. 4176.0020
 Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES			
No.	MP (in.)	Rec. Mois- ture	N Value	Depth (ft.)		qu (qa) (tsf)	PID (ppm)	pH	
1		M			Gray Gravel Surface with Black Stained Brown Silt, Sand and Gravel (FILL), Creosote Odor			170.0	7
					End of Boring at 2.5 ft Backfilled with Bentonite Chips				
				5					
				10					

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start	5/25/95	End	5/25/95
Driller	RSDC	Chief	LW Rig Acker
Logger	DAP	Editor	PMS
Drill Method	2 3/4" I.D. HSA		

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



LOG OF TEST BORING

Project Phibro Tech Inc.
 SWMU #5 - Rail Car Unloading Area
 Location Joliet, Illinois

Boring No. SB19
 Surface Elevation
 Job No. 4176.0020
 Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE				VISUAL CLASSIFICATION and Remarks			SOIL PROPERTIES			
No.	Moisture (in.)	Rec. Value	Depth (ft.)				qu (qa) (tsf)	PID (ppm)	pH	
			-		Dark Brown Silt, Sand and Gravel (FILL), Cresote Odor					
						Weathered Bedrock			6.0	7

5

10

End of Boring at 2.5 ft
Backfilled with Bentonite Chips

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

GENERAL NOTES

Start	5/25/95	End	5/25/95
Driller	RSDC	Chief	LW
Logger	DAP	Editor	PMS
Drill Method	2 3/4" I.D. HSA		

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



LOG OF TEST BORING

Project Phibro Tech Inc.
 SWMU #7 - Outside Drum Storage Area 2
 Location Joliet, Illinois

Boring No. SB20
 Surface Elevation
 Job No. 4176.0020
 Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES			
No.	Type	Rec. (in.)	Moisture	N Value	Depth (ft.)		qu (qa) (tsf)	PID (ppm)	pH	
1		10	M	50/6"		Gray Gravel (FILL)				
						Gray Gravel and Reddish Brick (FILL) Bedrock at 2.0 ft		2.0	11	
						End of Boring at 2.0 ft Backfilled with Bentonite Chips				
					5					
					10					

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start Date	5/24/95	End Date	5/24/95
Driller	RSDC	Chief Logger	LW
Logger	DAP	Editor	PMS
Drill Method	2 3/4" I.D. HSA		



LOG OF TEST BORING

Project Phibro Tech Inc.
 SWMU #7 - Outside Drum Storage Area 2
 Location Joliet, Illinois

Boring No. SB21
 Surface Elevation _____
 Job No. 4176.0020
 Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES			
No.	Type	Rec. (in.)	Mois- ture	N Value	Depth (ft.)		qu (qa) (tsf)	PID (ppm)	pH	
1		10	M/W	50/6		Gray Gravel (FILL)				
						Brown to Black Gravel, Silt and Brick (FILL)		5.0	8	
						Yellow-Brown Gravel, Sand and Silt (FILL), Weathered Bedrock				
					5	End of Boring at 2.5 ft Backfilled with Bentonite Chips				
					10					

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start	5/24/95	End	5/24/95
Driller	RSDC	Chief	LW
Logger	DAP	Editor	PMS
Drill Method	2 3/4" I.D. HSA		

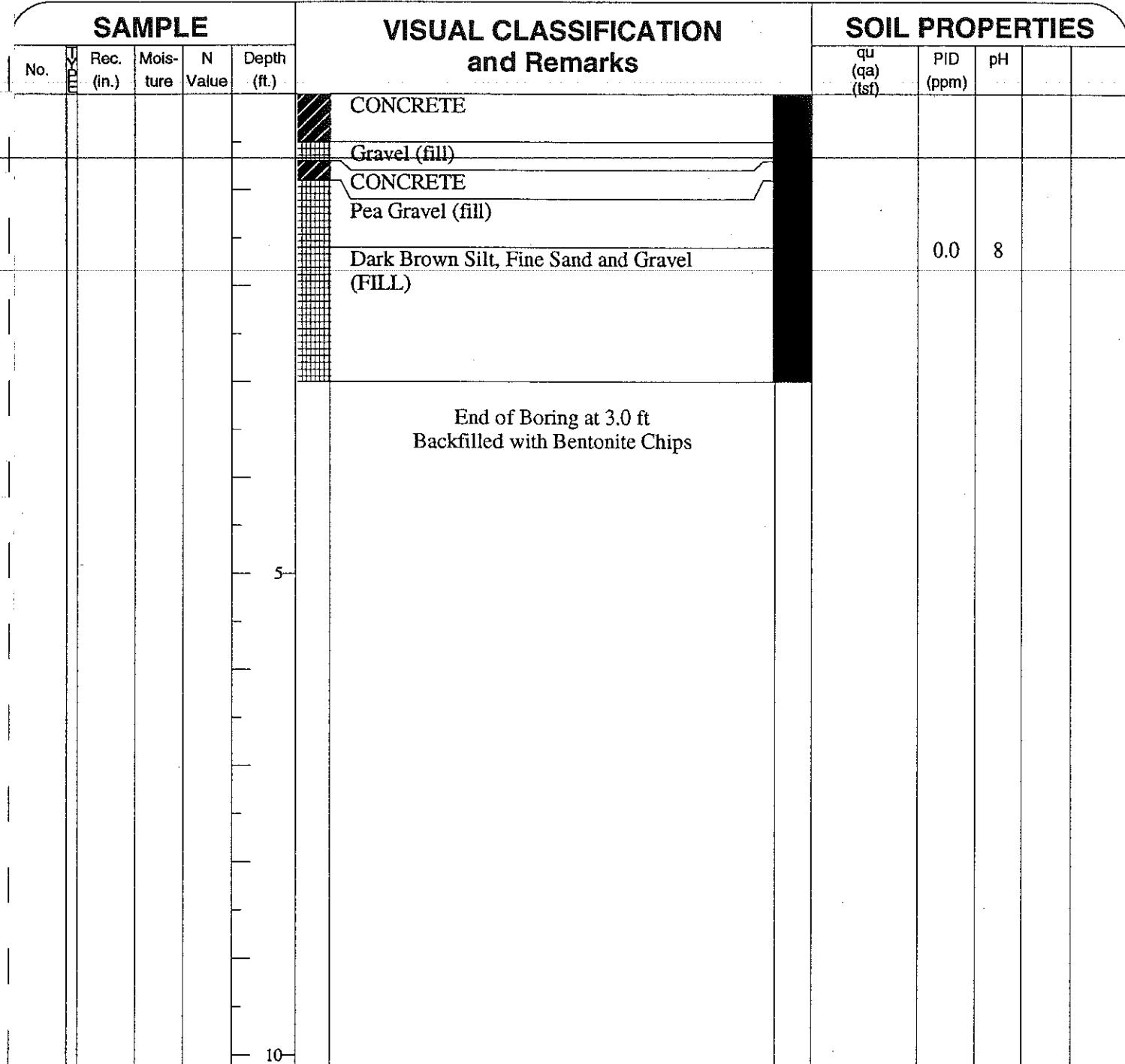


LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #7 - Outside Drum Storage Area 2
Location Joliet, Illinois

Boring No. SB22
Surface Elevation _____
Job No. 4176.0020
Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000



WATER LEVEL OBSERVATIONS

Time Drilling ft. Upon Completion of Drilling ft.
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/24/95 End 5/24/95
Driller RSDC Chief LW Rig Acker
Logger DAP Editor PMS
Drill Method 2 3/4" I.D. HSA

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LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #7 - Ferric Chloride Filter Press
Location Joliet, Illinois

Boring No. **SB23**
Surface Elevation _____
Job No. **4176.0020**
Sheet **1** of **1**

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	Typ	Rec. (in.)	Mois- ture	N Value	Depth (ft.)	qu (qa) (tsf)	PID (ppm)	pH		
					Gravel (fill)					
					Large Pieces of Concrete Rubble (FILL)					
					End of Boring at 1.0 ft Backfilled with Bentonite Chips					
					5					
					10					

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

GENERAL NOTES

Start **6/6/95** End **6/6/95**
Driller **RSDC** Chief **LW** Rig Acker
Logger **DAP** Editor **PMS**
Drill Method **2 3/4" I.D. HSA**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

ID: PS-JP



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LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #7 - Ferric Chloride Filter Press
Location Joliet, Illinois

2100 Corporate Drive, Addison, Illinois 60101, TEL (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks			SOIL PROPERTIES			
No.	Rec. (in.)	Mois- ture	N Value	Depth (ft.)			qu (qa) (tsf)	PID (ppm)	pH		
					Gray Gravel (FILL)						
					Black, Silty Clay, Gravel and Fine Sand, Pieces of Brick (FILL)			0.0	7		
					End of Boring at 1 ft Backfilled with Bentonite Chips						
				5							
				10							

WATER LEVEL OBSERVATIONS

ile Drilling ft. Upon Completion of Drilling
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/25/95 End 5/25/95
Driller RSDC Chief LW Rig Acker
Logger DAP Editor PMS
Drill Method 2 3/4" I.D. HSA



LOG OF TEST BORING

Project

Phibro Tech Inc.

SWMU #8 - Process Sewer System

Location Joliet, Illinois

Boring No. SB25

Surface Elevation

Job No. 4176.0020

Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE				VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES			
No.	Rec. <input type="checkbox"/>	Mois- ture (in.)	N Value	Depth (ft.)	qu (qa) (tsf)	PID (ppm)	pH	
				CONCRETE				
				Gravel FILL to 1.5 ft				
				Bedrock				
				End of Boring at 1.5 ft Backfilled with Bentonite Chips to 1 ft Concrete to Surface				
				5				
				10				

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

GENERAL NOTES

Start 6/5/95 End 6/5/95
Driller RSDC Chief LW Rig Acker
Logger DAP Editor PMS
Drill Method 2 3/4" I.D. HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

ID: PS-JKP

**MONTGOMERY
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LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #8 - Process Sewer System
Location Joliet, Illinois

Boring No. SB26
Surface Elevation _____
Job No. 4176.0020
Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES			
No.	T P E	Rec. (in.)	Mois- ture	N Value		qu (qa) (tsf)	PID (ppm)	pH	
					Gravel and Brick (FILL)				
1		11	M	13	Tan to Brown, Silty Fine Sand, Crushed Brick (FILL)				
					Dark Brown and Yellow Brown, Fine Sand and Silt (FILL)				
2			M	49	Possible Bedrock		8.6	7	
					End of Boring at 4.0 ft Backfilled with Bentonite Chips				
					5				
					10				

WATER LEVEL OBSERVATIONS

While Drilling ▼ ft. Upon Completion of Drilling ▼ ft.
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start	5/24/95	End	5/24/95
Driller	RSDC	Chief	LW
Logger	DAP	Editor	PMS
Drill Method	<u>2 3/4" I.D. HSA</u>		



LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #9 - Truck Unloading Area
Location Joliet, Illinois

Boring No. **SB27**
Surface Elevation _____
Job No. **4176.0020**
Sheet **1** of **1**

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks			SOIL PROPERTIES			
No.	Moisture	Rec. (in.)	Mois-ture	N Value	Depth (ft.)			qu (qa) (tsf)	PID (ppm)	pH	
1	M	16	M	19		Gray GRAVEL (FILL)			12.0	8	
						Brown Sand, Gravel and Pieces of Brick (FILL) Small Silt Zone at 1.5 ft					
						End of Boring at 3.5 ft Backfilled with Bentonite Chips					
					5						
					10						

WATER LEVEL OBSERVATIONS

ile Drilling ft. Upon Completion of Drilling
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start	5/25/95	End	5/25/95
Driller	RSDC	Chief	LW Rig Acker
Logger	DAP	Editor	PMS
Drill Method	2 3/4" I.D. HSA		

MONTGOMERY**WATSON****LOG OF TEST BORING**

Project **Phibro Tech Inc.**
SWMU #9 - Truck Unloading Area
 Location **Joliet, Illinois**

Boring No. **SB28**
 Surface Elevation _____
 Job No. **4176.0020**
 Sheet **1 of 1**

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks		SOIL PROPERTIES			
No.	T D E C T I C H	Rec. (in.)	Mois- ture	N Value	Depth (ft.)	qu (qa) (tsf)	PID (ppm)	pH		
1		14	M	50/6"	ASPHALT					
					Dark Brown Silt, Sand and Gravel, Few Pieces of Brick		0.0	9		
					Brown Silt, Fine Sand, Gravel and Black Silt					
					End of Boring at 2.5 ft Backfilled with Bentonite Chips					
					5					
					10					

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
 Time After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start Driller	5/25/95	End LW	5/25/95
Logger	RSDC	Chief Editor	Rig Acker
Drill Method	DAP	PMS	



LOG OF TEST BORING

Project Phibro Tech Inc.
Location SWMU #9 - Truck Unloading Area
Location Joliet, Illinois

Boring No. **SB29**
Surface Elevation _____
Job No. **4176.0020**
Sheet **1** of **1**

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
Time After Drilling _____
Depth to Water _____
Depth to Cave in _____

GENERAL NOTES

Start 5/25/95 End 5/25/95
Driller RSDC Chief LW Rig Acker
Logger DAP Editor PMS
Drill Method 2 3/4" I.D. HSA

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

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LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #2 - Chemical Sewer System
Location Joliet, Illinois

Boring No. SB30
Surface Elevation _____
Job No. 4176.0020
Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks			SOIL PROPERTIES		
No.	Temp (°F)	Rec. (in.)	Mois- ture	N Value	Depth (ft.)	qu (qa) (tsf)	PID (ppm)	pH		
					Light Gray Gravel and Sand (FILL)					
					Dark Yellow-Brown SILT, Sand and Gravel, Trace Clay (ML)			0.0	7	
					Auger Refusal at 3 Feet					
					End of Boring at 3.0 ft Backfilled with Bentonite Chips					
					5					
					10					

WATER LEVEL OBSERVATIONS

While Drilling ▽ ft. Upon Completion of Drilling ▼ ft.
After Drilling _____
Depth to Water _____
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 6/5/95 End 6/5/95
Driller RSDC Chief LW Rig Skid
Logger DAP Editor PMS
Drill Method 2 3/4" I.D. HSA

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LOG OF TEST BORING

Project Phibro Tech Inc.
SWMU #6 - Ferric Chloride Filter Press
Location Joliet, Illinois

Boring No. SB31
Surface Elevation _____
Job No. 4176.0020
Sheet 1 of 1

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE					VISUAL CLASSIFICATION and Remarks			SOIL PROPERTIES			
No.	Rec. (in.)	Mois- ture	N Value	Depth (ft.)				qu (qa) (tsf)	PID (ppm)	pH	
					CONCRETE						
					Orange Stained Pea Gravel (fill)						
					6 in Concrete						
					Coarse Gravel, Cobbles, Brick (FILL)						
					End of Boring at 3.2 ft Backfilled with Bentonite Chips to 2 ft Concrete to Surface						
					5						
					10						

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
ne After Drilling _____
Depth to Water _____
Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start Date	5/24/95	End Date	5/24/95	Rig Acker
Driller	RSDC	Chief Editor	LW PMS	
Logger	DAP	Editor		
Drill Method	10" Core Barrel - Hand Auger			

ID: ps-jkp

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LOG OF TEST BORING

Project Phibro Tech Inc.
 SWMU #6 - Ferric Chloride Filter Press
 Location Joliet, Illinois

Boring No. **SB32**
 Surface Elevation _____
 Job No. **4176.0020**
 Sheet **1 of 1**

2100 Corporate Drive, Addison, Illinois 60101, TEL. (708) 691-5000

SAMPLE				VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES			
No.	Rec. (in.)	Mois- ture	N Value		Depth (ft.)	qu (qa) (tsf)	PID (ppm)	pH
				CONCRETE				
				Orange Stained Pea Gravel (fill)		0.0		
				6 in. of CONCRETE		0.0		
				Coarse Gravel, Cobbles, Brick (FILL)				
				End of Boring at 3.2 ft Borehole Abandoned with Chips to 20" Concrete to Surface				
				5				
				10				

WATER LEVEL OBSERVATIONS

While Drilling ft. Upon Completion of Drilling ft.
 After Drilling _____
 Depth to Water _____
 Depth to Cave in _____

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start	5/24/95	End	5/24/95
Driller	RSDC	Chief	LW
Logger	DAP	Editor	PMS
Drill Method	10" Core Barrel - Hand Auger		

10-PS-JKP

DATA-GROUP

©

APPENDIX B
ANALYTICAL RESULTS



STANDARD REPORT FOOTNOTES

- A1 Elevated quantitation limit due to low sample volume.
- A2 Elevated quantitation limit necessary to overcome interference.
- A4 Result should be considered estimated due to sample-related problems encountered during analysis.
- A11 Sample received past recommended hold time.
- A12 Analysis requested past recommended hold time.
- A13 Initial analysis performed within hold time; confirmation analysis performed past recommended hold time. Results from repeat analysis are reported.
- A14 Initial analysis performed within hold time; necessary dilution performed past recommended hold time. Results from repeat analysis are reported.
- A15 Result should be considered estimated; analyte detected in method blank.
- A17 Result should be considered estimated as indicated by method QC.
- M3 Total analysis performed due to insufficient solid for TCLP extraction.
- G1 Result should be considered estimated, concentration exceeds working calibration range.
- G2 Elevated quantitation limit due to the concentration of petroleum hydrocarbons in the sample.
- G3 Elevated quantitation limit due to the concentration of non-specific hydrocarbons in the sample.
- C.. Analyte coelutes with _____; result calculated from calibration standards in a 1:1 ratio of these two compounds.
- G5 Sample required extensive cleanup; Endrin Aldehyde is not recovered from these techniques.
- G6 Petroleum-type odor detected from this sample.
- G7 Elevated quantitation limit due to the concentration of PCBs in the sample.
- G8 Result should be considered estimated due to coelution with an additional hydrocarbon product
- G9 Results are influenced by the presence of extraneous peaks which are not representative of petroleum hydrocarbon products.
- G10 Presence of one or more unidentified peaks eluting earlier than the retention time window.
- G11 Presence of one or more unidentified peaks eluting later than the retention time window.
- G12 Result is estimated. The method used is a screening procedure for this compound.
- G13 Measurement performed using test strips.
- G15 n-Nitrosodiphenylamine decomposes in the GC inlet and cannot be separated from Diphenylamine.
- G16 Measurement upon receipt performed using test strips. Adjusted to pH <2.
- () Results are influenced by the presence of extraneous peaks which are not representative of petroleum hydrocarbon products. Final results pending GC/MS confirmation.



METHOD REFERENCES

Analytes	Soil/Groundwater				Wastewater			
	ICP	Flame	Furnace	CV	ICP	Flame	Furnace	CV
Aluminium	6010	7020	-	-	200.7	202.1	-	-
Antimony	6010	7040	7041	-	200.7	-	204.2	-
Arsenic	6010	-	7060	-	200.7	-	206.2	-
Barium	6010	7080	7081	-	200.7	208.1	208.2	-
Beryllium	6010	7090	7091	-	200.7	210.1	210.2	-
Boron	6010	-	-	-	200.7	-	-	-
Cadmium	6010	7130	7131	-	200.7	213.1	213.2	-
Calcium	6010	7140	-	-	200.7	215.1	-	-
Chromium, Total	6010	7190	7191	-	200.7	218.1	218.2	-
Cobalt	6010	7200	-	-	200.7	219.1	-	-
Copper	6010	7210	-	-	200.7	220.1	-	-
Iron	6010	7380	-	-	200.7	236.1	-	-
Lead	6010	7420	7421	-	200.7	239.1	239.2	-
Magnesium	6010	7450	-	-	200.7	242.1	-	-
Manganese	6010	7460	-	-	200.7	243.1	-	-
Mercury	-	-	-	7470/7471				245.1
Molybdenum	6010	7480	-	-	200.7	246.1	-	-
Nickel	6010	7520	-	-	200.7	249.1	-	-
Potassium	-	SM3500D	-	-	-	SM3500D	-	-
Selenium	6010	-	7740	-	200.7	-	270.2	-
Silver	6010	7760	7761	-	200.7	272.1	272.2	-
Sodium	6010	SM3500D	-	-	200.7	SM3500D	-	-
Strontium	6010	-	-	-	200.7	-	-	-
Thallium	6010	7840	7841	-	200.7	279.1	279.2	-
Tin	6010	-	-	-	200.7	-	-	-
Titanium	6010	-	-	-	200.7	-	-	-
Vanadium	6010	7910	7911	-	200.7	286.1	286.2	-
Zinc	6010	7950	-	-	200.7	289.1	-	-

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EPA-600, "Methods for Chemical Analysis of Water and Wastes", March 1984.

Standard Methods for the Examination of Water and Wastewater", 17th Edition, 1989.



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)
METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.
JOLIET IL
Project Number: 4176.0020

Lab Sample # : L10828-001

Description : PBT-SB1-1-2 1/2

Sample Date : 25-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	96.0	09-JUN-95	
Barium	100	1.29	0.01	96.0	08-JUN-95	
Boron	1	0.023	0.005	92.0	08-JUN-95	
Chromium, Total	5	0.01	0.01	94.0	09-JUN-95	
Lead	5	0.502	0.0015	94.0	09-JUN-95	A15
Nickel	-	3.39	0.02	96.0	09-JUN-95	
Selenium	1	< 0.002	0.002	87.0	13-JUN-95	
Silver	5	0.01	0.01	94.0	08-JUN-95	

chk'd: *RAC* App'd: *GW*
Date App'd: 6-15-95



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METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-002

Description : PBT-SB2-1-2 1/2

Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	0.002	0.001	85.0	09-JUN-95	
Barium	100	0.54	0.01	94.0	08-JUN-95	
Cadmium	1	0.015	0.005	93.0	08-JUN-95	
Chromium, Total	5	< 0.01	0.01	90.0	09-JUN-95	
Lead	5	0.0780	0.0015	109.0	09-JUN-95	A15
Nickel	-	1.42	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	95.0	13-JUN-95	
Silver	5	< 0.01	0.01	84.0	08-JUN-95	

Chk'd: RSL App'd: AM
Date App'd: 6/15/95



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METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-003

Description : PBT-SB4-1-2 1/2

Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	0.001	0.001	85.0	09-JUN-95	
Barium	100	0.24	0.01	94.0	08-JUN-95	
Cadmium	1	0.029	0.005	93.0	08-JUN-95	
Cromium, Total	5	< 0.01	0.01	90.0	09-JUN-95	
Lead	5	0.0070	0.0015	109.0	09-JUN-95	A15
Nickel	-	7.75	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	95.0	13-JUN-95	
Silver	5	< 0.01	0.01	84.0	08-JUN-95	

Chk'd: *RK* App'd: *CAW*
Date App'd: *6/5/95*



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

METHOD 1311

INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-004

Description : PBT-SBS-1-2 1/2

Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	85.0	09-JUN-95	
Barium	100	0.31	0.01	94.0	08-JUN-95	
Cadmium	1	0.034	0.005	93.0	08-JUN-95	
Cromium, Total	5	< 0.01	0.01	90.0	09-JUN-95	
Lead	5	0.0070	0.0015	109.0	09-JUN-95	A15
Nickel	-	1.62	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	95.0	13-JUN-95	
Silver	5	< 0.01	0.01	84.0	08-JUN-95	



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METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample #: L10828-005

Description : PBT-SB10-1-2 1/2

Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Date	Footnote
Arsenic	5	< 0.001	0.001	96.0	09-JUN-95	
Barium	100	0.54	0.01	96.0	08-JUN-95	
Cadmium	1	0.047	0.005	92.0	08-JUN-95	
Chromium, Total	5	0.04	0.01	94.0	09-JUN-95	
Lead	5	0.0170	0.0015	94.0	09-JUN-95	A15
Nickel	-	5.92	0.02	96.0	09-JUN-95	
Selenium	1	< 0.002	0.002	87.0	13-JUN-95	
Silver	5	< 0.01	0.01	94.0	08-JUN-95	



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METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-006

Description : PBT-SB11-1-2 1/2

Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	85.0	09-JUN-95	
Barium	100	0.84	0.01	94.0	08-JUN-95	
Cadmium	1	0.016	0.005	93.0	08-JUN-95	
Chromium, Total	5	< 0.01	0.01	90.0	09-JUN-95	
Lead	5	0.0120	0.0015	109.0	09-JUN-95	A15
Nickel	-	4.49	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	95.0	13-JUN-95	
Silver	5	< 0.01	0.01	84.0	08-JUN-95	

Chk'd: *[Signature]* App'd: *[Signature]*
Date App'd: 6-15-95



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METHOD 1311

INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-007

Description : PBT-SB12-1-2 1/2

Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	85.0	09-JUN-95	
Barium	100	0.78	0.01	94.0	08-JUN-95	
Cadmium	1	0.022	0.005	93.0	08-JUN-95	
Cadmium, Total	5	< 0.01	0.01	90.0	09-JUN-95	
Lead	5	0.0250	0.0015	109.0	09-JUN-95	A15
Nickel	-	2.95	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	95.0	13-JUN-95	
Silver	5	< 0.01	0.01	84.0	08-JUN-95	



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METHOD 1311

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PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-008

Description : PBT-SB13-1-2 1/2

Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	85.0	09-JUN-95	
Barium	100	0.43	0.01	94.0	08-JUN-95	
Cadmium	1	0.070	0.005	93.0	08-JUN-95	
Cesium, Total	5	< 0.01	0.01	90.0	09-JUN-95	
Lead	5	0.0090	0.0015	109.0	09-JUN-95	A15
Nickel	-	7.96	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	95.0	13-JUN-95	
Silver	5	0.01	0.01	84.0	08-JUN-95	

Chk'd: fsk App'd: CWW
Date App'd: 6-15-95



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METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-009

Description : PBT-S814-1-2 1/2

Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	0.002	0.001	85.0	09-JUN-95	
Barium	100	0.79	0.01	94.0	08-JUN-95	
Cadmium	1	0.028	0.005	93.0	08-JUN-95	
Chromium, Total	5	< 0.01	0.01	90.0	09-JUN-95	
Lead	5	0.0140	0.0015	109.0	09-JUN-95	A15
Nickel	-	17.8	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	95.0	13-JUN-95	
Silver	5	< 0.01	0.01	84.0	08-JUN-95	



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

METHOD 1311

INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-010

Description : PBT-SB15-1-2 1/2

Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	0.003	0.001	85.0	09-JUN-95	
Barium	100	0.71	0.01	94.0	08-JUN-95	
Cadmium	1	0.039	0.005	93.0	08-JUN-95	
Chromium, Total	5	< 0.01	0.01	90.0	09-JUN-95	
Lead	5	0.0080	0.0015	109.0	09-JUN-95	A15.
Nickel	-	4.58	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	95.0	13-JUN-95	
Silver	5	< 0.01	0.01	84.0	08-JUN-95	



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METHOD 1311

INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-011

Description : PBT-SB17-1-2 1/2

Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	0.004	0.001	85.0	09-JUN-95	
Barium	100	0.60	0.01	94.0	08-JUN-95	
Cadmium	1	0.011	0.005	93.0	08-JUN-95	
Copper, Total	5	< 0.01	0.01	90.0	09-JUN-95	
Lead	5	0.0130	0.0015	109.0	09-JUN-95	A15
Nickel	-	0.07	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	95.0	13-JUN-95	
Silver	5	< 0.01	0.01	84.0	08-JUN-95	

chk'd: *PSK* App'd: *AW*
Date App'd: *6-15-95*



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample #: L10828-012

Description : PBT-SB18-1-2 1/2

Sample Date : 25-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	0.001	0.001	84.0	09-JUN-95	
Barium	100	0.67	0.01	97.0	08-JUN-95	
Cadmium	1	0.008	0.005	94.0	08-JUN-95	
Chromium, Total	5	0.03	0.01	94.0	09-JUN-95	
Lead	5	0.0180	0.0015	105.0	09-JUN-95	A15
Nickel	-	0.05	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	86.0	13-JUN-95	
Silver	5	< 0.01	0.01	88.0	08-JUN-95	

Chk'd: *ESL* App'd: *CAW*
Date App'd: 6-15-95



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-013

Description : PBT-SB19-1-2 1/2

Sample Date : 25-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	0.005	0.001	84.0	09-JUN-95	
Barium	100	0.68	0.01	97.0	08-JUN-95	
Cadmium	1	0.007	0.005	94.0	08-JUN-95	
Nickel, Total	5	< 0.01	0.01	94.0	09-JUN-95	
Lead	5	0.0060	0.0015	105.0	09-JUN-95	A15
Nickel	-	0.03	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	86.0	13-JUN-95	
Silver	5	< 0.01	0.01	88.0	08-JUN-95	

Chk'd: *[Signature]* App'd: *[Signature]*
Date App'd: 6-15-95



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)
METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample #: L10828-014

Description : PBT-SB20-1-2 1/2

Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	0.001	0.001	84.0	09-JUN-95	
Barium	100	0.43	0.01	97.0	08-JUN-95	
Cadmium	1	0.012	0.005	94.0	08-JUN-95	
Chromium, Total	5	0.02	0.01	94.0	09-JUN-95	
Lead	5	0.0230	0.0015	105.0	09-JUN-95	A15
Nickel	-	1.16	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	86.0	13-JUN-95	
Silver	5	< 0.01	0.01	88.0	08-JUN-95	



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)
METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.
JOLIET IL
Project Number: 4176.0020

Lab Sample # : L10828-015
Description : PBT-SB21-1-2 1/2
Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Date	Footnote
Arsenic	5	< 0.001	0.001	84.0	09-JUN-95	
Barium	100	0.61	0.01	97.0	08-JUN-95	
Cadmium	1	0.009	0.005	94.0	08-JUN-95	
Cadmium, Total	5	< 0.01	0.01	94.0	09-JUN-95	
Lead	5	0.0510	0.0015	105.0	09-JUN-95	A15
Nickel	-	0.16	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	86.0	13-JUN-95	
Silver	5	< 0.01	0.01	88.0	08-JUN-95	

Chk'd: JK App'd: (AW)
Date App'd: 6-15-95



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

METHOD 1311

INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample #: L10828-016

Description : PBT-SB22-30" (2.5")

Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	84.0	09-JUN-95	
Barium	100	0.43	0.01	97.0	08-JUN-95	
Cadmium	1	< 0.005	0.005	94.0	08-JUN-95	
Cadmium, Total	5	< 0.01	0.01	94.0	09-JUN-95	
Lead	5	0.0970	0.0015	105.0	09-JUN-95	A15
Nickel	-	< 0.02	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	86.0	13-JUN-95	
Silver	5	< 0.01	0.01	88.0	08-JUN-95	



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)
METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.
JOLIET IL
Project Number: 4176.0020

Lab Sample # : L10828-017
Description : PBT-SB26-2-3 1/2
Sample Date : 24-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	0.002	0.001	84.0	09-JUN-95	
Barium	100	0.43	0.01	97.0	08-JUN-95	
Cadmium	1	0.078	0.005	94.0	08-JUN-95	
Cesium, Total	5	< 0.01	0.01	94.0	09-JUN-95	
Lead	5	0.0140	0.0015	105.0	09-JUN-95	A15
Nickel	-	0.03	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	86.0	13-JUN-95	
Silver	5	< 0.01	0.01	88.0	08-JUN-95	

Chk'd: RSK App'd: CPW
Date App'd: 6-15-95



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample #: L10828-018

Description : PBT-SB27-1-2 1/2

Sample Date : 25-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	84.0	09-JUN-95	
Barium	100	1.54	0.01	97.0	08-JUN-95	
Cadmium	1	0.018	0.005	94.0	08-JUN-95	
Chromium, Total	5	< 0.01	0.01	94.0	09-JUN-95	
Copper	5	0.0080	0.0015	105.0	09-JUN-95	A15
Nickel	-	0.54	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	86.0	13-JUN-95	
Silver	5	< 0.01	0.01	88.0	08-JUN-95	

Chk'd: JK App'd: GW
Date App'd: 6-15-95



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-019

Description : PBT-SB28-1-2 1/2

Sample Date : 25-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	84.0	09-JUN-95	
Barium	100	0.32	0.01	97.0	08-JUN-95	
Cadmium	1	0.019	0.005	94.0	08-JUN-95	
Cadmium, Total	5	< 0.01	0.01	94.0	09-JUN-95	
Lead	5	0.0080	0.0015	105.0	09-JUN-95	A15
Nickel	-	0.32	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	86.0	13-JUN-95	
Silver	5	< 0.01	0.01	88.0	08-JUN-95	

Chk'd: JK App'd: JK
Date App'd: 6/15/95



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

METHOD 1311

INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-020

Description : PBT-SB29-1-2 1/2

Sample Date : 25-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	84.0	09-JUN-95	
Barium	100	0.22	0.01	97.0	08-JUN-95	
Cadmium	1	0.020	0.005	94.0	08-JUN-95	
Chromium, Total	5	< 0.01	0.01	94.0	09-JUN-95	
Lead	5	0.0040	0.0015	105.0	09-JUN-95	A15
Nickel	-	0.30	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	86.0	13-JUN-95	
Silver	5	0.01	0.01	88.0	08-JUN-95	



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample #: L10828-021

Description : PBT-SB17-1-2 1/2 DUP

Sample Date : 25-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	0.007	0.001	84.0	09-JUN-95	
Barium	100	0.50	0.01	97.0	08-JUN-95	
Cadmium	1	0.011	0.005	94.0	08-JUN-95	
Copper, Total	5	< 0.01	0.01	94.0	09-JUN-95	
Lead	5	0.0070	0.0015	105.0	09-JUN-95	A15
Nickel	-	0.04	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	86.0	13-JUN-95	
Silver	5	< 0.01	0.01	88.0	08-JUN-95	

Chk'd: RK App'd: PAW
Date App'd: 6-15-95



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10828-022

Description : PBT-SB27-1-2 1/2 DUP

Sample Date : 25-MAY-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	84.0	09-JUN-95	
Barium	100	1.29	0.01	97.0	08-JUN-95	
Cadmium	1	0.009	0.005	94.0	08-JUN-95	
Chromium, Total	5	< 0.01	0.01	94.0	09-JUN-95	
Lead	5	0.0060	0.0015	105.0	09-JUN-95	A15
Nickel	-	1.12	0.02	100.0	09-JUN-95	
Selenium	1	< 0.002	0.002	86.0	13-JUN-95	
Silver	5	< 0.01	0.01	88.0	08-JUN-95	

Chk'd: *[Signature]* App'd: *[Signature]*
Date App'd: 6-15-95



MONTGOMERY WATSON

CHAIN OF CUSTODY RECORD

PROJECT NAME:
J4, Blo-Tech Inc.
CITY: JOLIET
SAMPLE(S): A. D. egg

PROJECT #/16.0020
STATE: Illinois

8 METALS: Arsenic, Barium
Cadmium, Chromium
Lead, Nickel,
Selenium, Silver

COLLECTION DATE COLLECTION TIME GRAB / SAMP /

COLLECTION DATE	COLLECTION TIME	SAMPLE ID	NO. OF CONTAINERS
5/23/95	1645	X PBT-SB1 - 1-2 1/2	1
5/24/95	1040	PBT-SB2 - 1-2 1/2	1
	1025	PBT-SB4 - 1-2 1/2	1
	1000	PBT-SB5 - 1-2 1/2	1
	1120	PBT-SB10 - 1-2 1/2	1
	1140	PBT-SB11 - 1-2 1/2	1
	1200	PBT-SB12 - 1-2 1/2	1
	1320	PBT-SB13 - 1-2 1/2	1
✓	1340	PBT-SB14 - 1-2 1/2	1
5/24/95	1100	PBT-SB15 - 1-2 1/2	1
5/25/95	930	PBT-SB17 - 1-2 1/2	1

SPECIAL INSTRUCTIONS:

RECEIVED: INTACT ON ICE TEMP _____ OF

PROJ. MGR.: PROJ. MGR.: Martin Hamper

See Enclosed Instructions
for METALS Analysis

SIGNATURE	PRINT NAME	COMPANY / TITLE	DATE / TIME
D. A. P.	David A. Pearynski	Montgomery Watson / Hydrogeologist	5/25/95 / 1000
<i>D. A. P.</i>			
<i>D. A. P.</i>			
<i>D. A. P.</i>			

C-O-C No. 01047

D. L. Cole

NAME OF COURIER: Pepe
AIRBILL NUMBER: 11 2688 934

SPECIAL INSTRUCTIONS:

- PECFA
- WI LUST
- ACT 307
- REPORT DRY WT
- OTHER: RCR-A

URNAROUND
2 WEEKS (standard)

1 WEEK

3 DAYS

1 DAY



CHAIN OF CUSTODY RECORD

SPECIAL INSTRUCTIONS:	
<input type="checkbox"/> PECFA	<input checked="" type="checkbox"/> INAROUND
<input type="checkbox"/> WI LUST	<input type="checkbox"/> 2 WEEKS (standard)
<input type="checkbox"/> ACT 307	<input type="checkbox"/> 1 WEEK
<input type="checkbox"/> REPORT DRY WT	<input type="checkbox"/> 3 DAYS
<input checked="" type="checkbox"/> 1 DAY	
26 THEB Tech A	

PROJECT NAME: HHS-Tech - Inc.	PROJECT #: 4/16-0020	NO. OF CONTAINERS: 10 Holes	SPECIAL INSTRUCTIONS: Arsenic, Cadmium, Chromium, Barium, Lead, Nickel, Selenium, + Silver	
CITY: Joyet	STATE: Lehigh Co.	SAMPLE ID: Holes	REMARKS:	LAB USE ONLY
SAMPLER(S): J.A. Sch				
COLLECTION DATE	COLLECTION TIME	SAMPLE ID	MATRIX	LAB NO.
5/25/95	9:00	PBT-SB15 - 1-2 1/2	SLWD	10828-A02
5/25/95	10:15	PBT-SB15 - 1-2 1/2		013
5/24/95	14:25	PBT-SB20 - 1-2 1/2		014
5/24/95	14:00	PBT-SB21 - 1-2 1/2		015
5/24/95	16:30	PBT-SB22 - 30" (2.5")		016
*	11:00	PBT-SB24 - 6-10"		017
5/24/95	9:45	PBT-SB26 - 2-3 1/2		018
5/25/95	9:20	PBT-SB27 - 1-2 1/2		019
5/25/95	9:00	PBT-SB28 - 1-2 1/2		020
5/25/95	8:30	PBT-SB29 - 1-2 1/2		
*	5/25/95 12:15	PBT-SB32 - 8-14"		
		RECEIVED: <input checked="" type="checkbox"/> INTACT <input type="checkbox"/> ON ICE TEMP <input type="checkbox"/> OF	PROJ. MGR: Matthew Hansen	
		See Enclosed Instructions For metals analysis		
		* = Holes Samples DO NOT analyze yet		
SIGNATURE: John Sch	PRINT NAME: David A. Pezzano	COMPANY / TITLE: Montgomery Watson/Hydrogen	DATE / TIME: Sept 16 00	NAME OF COURIER: FED EX
RELINQUISHED BY: John Sch	RECEIVED BY: D. Lankford	RELINQUISHED BY: D. Lankford	RECEIVED BY: Montgomery Watson	AIRBILL NUMBER: 1117988934
C-O-C No.: 010418				



MONTEGO MEYER MASTON

CHAIN OF CUSTODY RECORD



METHOD REFERENCES

Analytes	Soil/Groundwater				Wastewater			
	ICP	Flame	Furnace	CV	ICP	Flame	Furnace	CV
Aluminum	6010	7020	-	-	200.7	202.1	-	-
Antimony	6010	7040	7041	-	200.7	-	204.2	-
Arsenic	6010	-	7060	-	200.7	-	206.2	-
Barium	6010	7080	7081	-	200.7	208.1	208.2	-
Beryllium	6010	7090	7091	-	200.7	210.1	210.2	-
Boron	6010	-	-	-	200.7	-	-	-
Cadmium	6010	7130	7131	-	200.7	213.1	213.2	-
Calcium	6010	7140	-	-	200.7	215.1	-	-
Chromium, Total	6010	7190	7191	-	200.7	218.1	218.2	-
Cobalt	6010	7200	-	-	200.7	219.1	-	-
Copper	6010	7210	-	-	200.7	220.1	-	-
Iron	6010	7380	-	-	200.7	236.1	-	-
Lead	6010	7420	7421	-	200.7	239.1	239.2	-
Magnesium	6010	7450	-	-	200.7	242.1	-	-
Manganese	6010	7460	-	-	200.7	243.1	-	-
Mercury	-	-	-	7470/7471				245.1
Molybdenum	6010	7480	-	-	200.7	246.1	-	-
Nickel	6010	7520	-	-	200.7	249.1	-	-
Potassium	-	SM3500D	-	-	-	SM3500D	-	-
Selenium	6010	-	7740	-	200.7	-	270.2	-
Silver	6010	7760	7761	-	200.7	272.1	272.2	-
Sodium	6010	SM3500D	-	-	200.7	SM3500D	-	-
Strontium	6010	-	-	-	200.7	-	-	-
Thallium	6010	7840	7841	-	200.7	279.1	279.2	-
Tin	6010	-	-	-	200.7	-	-	-
Titanium	6010	-	-	-	200.7	-	-	-
Vanadium	6010	7910	7911	-	200.7	286.1	286.2	-
Zinc	6010	7950	-	-	200.7	289.1	-	-

SW846, "Test Methods for Evaluating Solid Waste", 3rd Ed., December 1987.

EPA-600, "Methods for Chemical Analysis of Water and Wastes", March 1984.

Standard Methods for the Examination of Water and Wastewater", 17th Edition, 1989.



STANDARD REPORT FOOTNOTES

- A1 Elevated quantitation limit due to low sample volume.
- A2 Elevated quantitation limit necessary to overcome interference.
- A4 Result should be considered estimated due to sample-related problems encountered during analysis.
- A11 Sample received past recommended hold time.
- A12 Analysis requested past recommended hold time.
- A13 Initial analysis performed within hold time; confirmation analysis performed past recommended hold time.
Results from repeat analysis are reported.
- A14 Initial analysis performed within hold time; necessary dilution performed past recommended hold time.
Results from repeat analysis are reported.
- A15 Result should be considered estimated; analyte detected in method blank. Cadmium @ 0.006 mg/L
- A17 Result should be considered estimated as indicated by method QC.
- M3 Total analysis performed due to insufficient solid for TCLP extraction.
- G1 Result should be considered estimated, concentration exceeds working calibration range.
- G2 Elevated quantitation limit due to the concentration of petroleum hydrocarbons in the sample.
- G3 Elevated quantitation limit due to the concentration of non-specific hydrocarbons in the sample.
- 4 Analyte coelutes with _____; result calculated from calibration standards in a 1:1 ratio of these two compounds.
- G5 Sample required extensive cleanup; Endrin Aldehyde is not recovered from these techniques.
- G6 Petroleum-type odor detected from this sample.
- G7 Elevated quantitation limit due to the concentration of PCBs in the sample.
- G8 Result should be considered estimated due to coelution with an additional hydrocarbon product.
- G9 Results are influenced by the presence of extraneous peaks which are not representative of petroleum hydrocarbon products.
- G10 Presence of one or more unidentified peaks eluting earlier than the retention time window.
- G11 Presence of one or more unidentified peaks eluting later than the retention time window.
- G12 Result is estimated. The method used is a screening procedure for this compound.
- G13 Measurement performed using test strips.
- G15 n-Nitrosodiphenylamine decomposes in the GC inlet and cannot be separated from Diphenylamine.
- G16 Measurement upon receipt performed using test strips. Adjusted to pH <2.
- G17 Results are influenced by the presence of extraneous peaks which are not representative of petroleum hydrocarbon products. Final results pending GC/MS confirmation.
- 18 An LCS/LCS duplicate was performed in lieu of an MS/MSD due to insufficient sample volume available for the MS/MSD analysis.



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

METHOD 1311

INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10922-001

Description : PBT-SB6-2-2.5'

Sample Date : 05-JUN-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	85.0	26-JUN-95	
Barium	100	0.10	0.01	-	29-JUN-95	(a)
Cadmium	1	0.044	0.005	101.0	21-JUN-95	A15
Chromium, Total	5	< 0.01	0.01	96.0	22-JUN-95	
Lead	5	0.0070	0.0015	80.0	23-JUN-95	
Nickel	-	3.55	0.02	96.0	21-JUN-95	
Selenium	1	< 0.004	0.002	-	23-JUN-95	A2, (a)
Silver	5	< 0.01	0.01	50.0	22-JUN-95	

(a) Result obtained by method of standard addition (MSA).



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)
METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.
JOLIET IL
Project Number: 4176.0020

Lab Sample # : L10922-002

Description : PBT-SB7-2-3'

Sample Date : 05-JUN-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	0.005	0.001	85.0	26-JUN-95	
Barium	100	0.32	0.01	-	29-JUN-95	(a)
Cadmium	1	0.041	0.005	101.0	21-JUN-95	A15
Copper, Total	5	< 0.01	0.01	96.0	22-JUN-95	
Lanthanum	5	0.205	0.0015	80.0	23-JUN-95	
Nickel	-	0.50	0.02	96.0	21-JUN-95	
Selenium	1	< 0.004	0.002	-	23-JUN-95	A2, (a)
Silver	5	< 0.01	0.01	50.0	22-JUN-95	

(a) Result obtained by method of standard addition (MSA).



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.

JOLIET IL

Project Number: 4176.0020

Lab Sample # : L10922-003

Description : PBT-SB8-2-3'

Sample Date : 05-JUN-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	85.0	26-JUN-95	
Barium	100	0.30	0.01	-	29-JUN-95	(a)
Cadmium	1	0.009	0.005	101.0	21-JUN-95	A15
Cromium, Total	5	< 0.01	0.01	96.0	22-JUN-95	
Lead	5	1.39	0.0015	80.0	23-JUN-95	
Nickel	-	0.95	0.02	96.0	21-JUN-95	
Selenium	1	< 0.004	0.002	-	23-JUN-95	A2, (a)
Silver	5	< 0.01	0.01	50.0	22-JUN-95	

(a) Result obtained by method of standard addition (MSA).



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TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)
METHOD 1311
INORGANIC REPORT

PHIBRO-TECH INC.
JOLIET IL
Project Number: 4176.0020

Lab Sample # : L10922-004
Description : PBT-SB30-2-3'
Sample Date : 05-JUN-95

Test	Regulatory Limit (mg/L)	Analytical Result (mg/L)	Reporting Limit (mg/L)	Matrix Spike Recovery (%)	Analysis Date	Footnote
Arsenic	5	< 0.001	0.001	85.0	26-JUN-95	
Barium	100	0.17	0.01	-	29-JUN-95	(a)
Cadmium	1	0.077	0.005	101.0	21-JUN-95	A15
Chromium, Total	5	< 0.01	0.01	96.0	22-JUN-95	
Lead	5	0.0300	0.0015	80.0	23-JUN-95	
Nickel	-	5.82	0.02	96.0	21-JUN-95	
Selenium	1	< 0.004	0.002	-	23-JUN-95	A2, (a)
Silver	5	< 0.01	0.01	50.0	22-JUN-95	

(a) Result obtained by method of standard addition (MSA).



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INORGANIC REPORT
PHIBRO-TECH INC.
JOLIET IL
Project Number: 4176.0020

Sample #	Description	Test	Reporting			Sample Date	Analysis Date
			Result	Limit	Matrix		
L10922-005	PBT-SB8-GW-UNFILTERED	Arsenic	0.148	0.001	GroundH2O	mg/L	05-JUN-95 21-JUN-95
		Barium	3.36	0.01	GroundH2O	mg/L	05-JUN-95 22-JUN-95
		Cadmium	0.0334	0.0002	GroundH2O	mg/L	05-JUN-95 26-JUN-95
		Chromium, Total	2.06	0.01	GroundH2O	mg/L	05-JUN-95 22-JUN-95
		Lead	32.8	0.0015	GroundH2O	mg/L	05-JUN-95 26-JUN-95
		Nickel	88.5	0.02	GroundH2O	mg/L	05-JUN-95 30-JUN-95
		Selenium	0.018	0.002	GroundH2O	mg/L	05-JUN-95 23-JUN-95
		Silver	0.05	0.01	GroundH2O	mg/L	05-JUN-95 22-JUN-95
L10922-006	PBT-SB8-GW-FILTERED	Arsenic	< 0.001	0.001	GroundH2O	mg/L	05-JUN-95 21-JUN-95
		Barium	0.05	0.01	GroundH2O	mg/L	05-JUN-95 22-JUN-95
		Cadmium	0.0005	0.0002	GroundH2O	mg/L	05-JUN-95 26-JUN-95
		Chromium, Total	0.05	0.01	GroundH2O	mg/L	05-JUN-95 22-JUN-95
		Lead	< 0.0015	0.0015	GroundH2O	mg/L	05-JUN-95 28-JUN-95
		Nickel	0.11	0.02	GroundH2O	mg/L	05-JUN-95 21-JUN-95
		Selenium	< 0.008	0.002	GroundH2O	mg/L	05-JUN-95 23-JUN-95
		Silver	< 0.01	0.01	GroundH2O	mg/L	05-JUN-95 22-JUN-95

Footnotes

Sample #	Test	Footnote
L10922-005	Barium	A4
L10922-005	Chromium, Total	A4
L10922-006	Selenium	A2



MONTGOMERY WATSON

CHAIN OF CUSTODY RECORD

NAME OF COURIER: FedEx
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Tracking #: 44



STANDARD REPORT FOOTNOTES

MONTGOMERY WATSON LABORATORIES

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- A1 Elevated quantitation limit due to low sample volume.
- A2 Elevated quantitation limit necessary to overcome interference.
- A4 Result should be considered estimated due to sample-related problems encountered during analysis.
- A11 Sample received past recommended hold time.
- A12 Analysis requested past recommended hold time.
- A13 Initial analysis performed within hold time; confirmation analysis performed past recommended hold time.
Results from repeat analysis are reported.
- A14 Initial analysis performed within hold time; necessary dilution performed past recommended hold time.
Results from repeat analysis are reported.
- A15 Result should be considered estimated; analyte detected in method blank. _____ @
- A17 Result should be considered estimated as indicated by method QC.
- M3 Total analysis performed due to insufficient solid for TCLP extraction.
- G1 Result should be considered estimated, concentration exceeds working calibration range.
- G2 Elevated quantitation limit due to the concentration of petroleum hydrocarbons in the sample.
- G3 Elevated quantitation limit due to the concentration of non-specific hydrocarbons in the sample.
- G4 Analyte coelutes with _____; result calculated from calibration standards in a 1:1 ratio of these two compounds.
- G5 Sample required extensive cleanup; Endrin Aldehyde is not recovered from these techniques.
- G6 Petroleum-type odor detected from this sample.
- G7 Elevated quantitation limit due to the concentration of PCBs in the sample.
- G8 Result should be considered estimated due to coelution with an additional hydrocarbon product.
- G9 Results are influenced by the presence of extraneous peaks which are not representative of petroleum hydrocarbon products.
- G10 Presence of one or more unidentified peaks eluting earlier than the retention time window.
- G11 Presence of one or more unidentified peaks eluting later than the retention time window.
- G12 Result is estimated. The method used is a screening procedure for this compound.
- G13 Measurement performed using test strips.
- G15 n-Nitrosodiphenylamine decomposes in the GC inlet and cannot be separated from Diphenylamine.
- G16 Measurement upon receipt performed using test strips. Adjusted to pH <2.
- G17 Results are influenced by the presence of extraneous peaks which are not representative of petroleum hydrocarbon products. Final results pending GC/MS confirmation.
- G18 An LCS/LCS duplicate was performed in lieu of an MS/MSD due to insufficient sample volume available for the MS/MSD analysis.
- G19 Sample was filtered and preserved in the laboratory upon receipt.

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METHOD REFERENCES

Analytes	Soil/Groundwater				Wastewater			
	ICP	Flame	Furnace	CV	ICP	Flame	Furnace	CV
Aluminium	6010	7020	-	-	200.7	202.1	-	-
Antimony	6010	7040	7041	-	200.7	-	204.2	-
Arsenic	6010	-	7060	-	200.7	-	206.2	-
Barium	6010	7080	7081	-	200.7	208.1	208.2	-
Beryllium	6010	7090	7091	-	200.7	210.1	210.2	-
Boron	6010	-	-	-	200.7	-	-	-
Cadmium	6010	7130	7131	-	200.7	213.1	213.2	-
Calcium	6010	7140	-	-	200.7	215.1	-	-
Chromium, Total	6010	7190	7191	-	200.7	218.1	218.2	-
Cobalt	6010	7200	-	-	200.7	219.1	-	-
Copper	6010	7210	-	-	200.7	220.1	-	-
Iron	6010	7380	-	-	200.7	236.1	-	-
Lead	6010	7420	7421	-	200.7	239.1	239.2	-
Magnesium	6010	7450	-	-	200.7	242.1	-	-
Manganese	6010	7460	-	-	200.7	243.1	-	-
Mercury	-	-	-	7470/7471				245.1
Molybdenum	6010	7480	-	-	200.7	246.1	-	-
Nickel	6010	7520	-	-	200.7	249.1	-	-
Potassium	-	SM3500D	-	-	-	SM3500D	-	-
Selenium	6010	-	7740	-	200.7	-	270.2	-
Silver	6010	7760	7761	-	200.7	272.1	272.2	-
Sodium	6010	SM3500D	-	-	200.7	SM3500D	-	-
Strontium	6010	-	-	-	200.7	-	-	-
Thallium	6010	7840	7841	-	200.7	279.1	279.2	-
Tin	6010	-	-	-	200.7	-	-	-
Titanium	6010	-	-	-	200.7	-	-	-
Vanadium	6010	7910	7911	-	200.7	286.1	286.2	-
Zinc	6010	7950	-	-	200.7	289.1	-	-

SW846, "Test Methods for Evaluating Solid Waste", 3rd Ed., December 1987.

EPA-600, "Methods for Chemical Analysis of Water and Wastes", March 1984.

Standard Methods for the Examination of Water and Wastewater", 17th Edition, 1989.



MONTGOMERY WATSON LABORATORIES

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INORGANIC REPORT
ERM NORTH CENTRAL/PHIBROTECH
DEERFIELD IL
Project Number: 3014859

Sample #	Description	Test	Result	Reporting Limit	Matrix	Units	Sample Date	Analysis Date
L11939-001	PBT-SB14-1-2 1/ 2	Arsenic	5.11	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	114	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	4.85	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	25.2	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	25.9	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.09	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.46	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
L11939-002	PBT-SB13-1-2 1/ 2	Arsenic	6.91	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	54.2	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	9.92	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	13.6	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	77.8	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	1.34	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.73	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
L11939-003	PBT-SB12-1-2 1/ 2	Arsenic	21.3	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	130	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	6.54	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	8.18	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	139	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.93	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.44	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
L11939-004	PBT-SB11-1-2 1/ 2	Arsenic	6.47	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	96.8	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	6.14	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	24.3	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	47.2	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.16	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.52	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95

Note: Results in mg/kg are reported on an "as received" or wet weight basis.

WI Lab Certification ID#: 113138300

INORG - 1

Chk'd: RK App'd: JMT
Date App'd: 11/23/95



MONTGOMERY WATSON LABORATORIES

INORGANIC REPORT
ERM NORTH CENTRAL/PHIBROTECH
DEERFIELD IL
Project Number: 3014859

Madison Division
1 Science Court
Madison, Wisconsin 53711
Tel: 608 231 4747
Fax: 608 231 4777

Sample #	Description	Test	Result	Reporting Limit	Matrix	Units	Sample Date	Analysis Date
L11939-005	PBT-SB10-1-2 1/2	Arsenic	10.4	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	4.92	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	5.41	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	76.4	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	7.85	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.05	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.94	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
L11939-006	PBT-SB5-1-2 1/2	Arsenic	6.15	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	40.4	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	5.91	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	19.5	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	80.0	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.32	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.30	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
'939-007	PBT-SB4-1-2 1/2	Arsenic	14.3	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	153	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	16.5	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	21.3	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	390	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	1.54	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.79	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
L11939-008	PBT-SB2-1-2 1/2	Arsenic	14.0	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	114	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	8.22	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	9.50	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	148	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.41	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	1.09	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95

Note: Results in mg/kg are reported on an "as received" or wet weight basis.

Lab Certification ID#: 113138300

Chk'd: *MWC* App'd: *AMT*
Date App'd: *1/23/95*



MONTGOMERY WATSON LABORATORIES

INORGANIC REPORT
ERM NORTH CENTRAL/PHIBROTECH
DEERFIELD IL
Project Number: 3014859

Madison Division
1 Science Court
Madison, Wisconsin 53711
Tel: 608 231 4747
Fax: 608 231 4777

Sample #	Description	Test	Reporting			Sample Date	Analysis Date
			Result	Limit	Matrix		
L11939-009	PBT-SB1-1-2 1/2	Arsenic	4.66	0.10	Solid	mg/kg	25-MAY-95 14-NOV-95
		Barium	106	0.50	Solid	mg/kg	25-MAY-95 10-NOV-95
		Cadmium	4.04	0.25	Solid	mg/kg	25-MAY-95 10-NOV-95
		Chromium, Total	22.0	0.50	Solid	mg/kg	25-MAY-95 10-NOV-95
		Lead	207	5.00	Solid	mg/kg	25-MAY-95 10-NOV-95
		Mercury	0.60	0.04	Solid	mg/kg	25-MAY-95 07-NOV-95
		Selenium	0.31	0.20	Solid	mg/kg	25-MAY-95 16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95 20-NOV-95
		Arsenic	7.65	0.10	Solid	mg/kg	25-MAY-95 14-NOV-95
		Barium	36.8	0.50	Solid	mg/kg	25-MAY-95 10-NOV-95
L11939-010	PBT-SB22-1-2 1/2	Cadmium	5.95	0.25	Solid	mg/kg	25-MAY-95 10-NOV-95
		Chromium, Total	9.67	0.50	Solid	mg/kg	25-MAY-95 10-NOV-95
		Lead	417	5.00	Solid	mg/kg	25-MAY-95 10-NOV-95
		Mercury	0.16	0.04	Solid	mg/kg	25-MAY-95 07-NOV-95
		Selenium	0.47	0.20	Solid	mg/kg	25-MAY-95 16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95 20-NOV-95
		Arsenic	5.84	0.10	Solid	mg/kg	25-MAY-95 14-NOV-95
		Barium	62.8	0.50	Solid	mg/kg	25-MAY-95 10-NOV-95
1939-011	PBT-SB17-1-2 1/2	Cadmium	5.96	0.25	Solid	mg/kg	25-MAY-95 10-NOV-95
		Chromium, Total	126	0.50	Solid	mg/kg	25-MAY-95 10-NOV-95
		Lead	42.6	5.00	Solid	mg/kg	25-MAY-95 10-NOV-95
		Mercury	0.06	0.04	Solid	mg/kg	25-MAY-95 07-NOV-95
		Selenium	0.84	0.20	Solid	mg/kg	25-MAY-95 16-NOV-95
		Silver	0.74	0.50	Solid	mg/kg	25-MAY-95 20-NOV-95
		Arsenic	33.0	0.10	Solid	mg/kg	25-MAY-95 14-NOV-95
		Barium	101	0.50	Solid	mg/kg	25-MAY-95 10-NOV-95
L11939-012	PBT-SB27-1-2 1/2	Cadmium	4.95	0.25	Solid	mg/kg	25-MAY-95 10-NOV-95
		Chromium, Total	8.44	0.50	Solid	mg/kg	25-MAY-95 10-NOV-95
		Lead	47.7	5.00	Solid	mg/kg	25-MAY-95 10-NOV-95
		Mercury	< 0.04	0.04	Solid	mg/kg	25-MAY-95 07-NOV-95
		Selenium	0.72	0.20	Solid	mg/kg	25-MAY-95 16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95 20-NOV-95

Note: Results in mg/kg are reported on an "as received" or wet weight basis.

Lab Certification ID#: 113138300

INORG - 3

chk'd: *RJC* App'd: *AWT*
Date App'd: *11/23/95*



MONTGOMERY WATSON LABORATORIES

INORGANIC REPORT
 ERM NORTH CENTRAL/PHIBROTECH
 DEERFIELD IL
 Project Number: 3014859

Madison Division
 1 Science Court
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 Tel: 608 231 4747
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Sample #	Description	Test	Result	Reporting Limit	Matrix	Units	Sample Date	Analysis Date
L11939-013	PBT-SB21-1-2 1/ 2	Arsenic	2.00	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	221	0.50	Solid	mg/kg	25-MAY-95	15-NOV-95
		Cadmium	6.45	0.25	Solid	mg/kg	25-MAY-95	15-NOV-95
		Chromium, Total	10.5	0.50	Solid	mg/kg	25-MAY-95	15-NOV-95
		Lead	141	5.00	Solid	mg/kg	25-MAY-95	15-NOV-95
		Mercury	0.16	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	2.31	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	15-NOV-95
L11939-014	PBT-SB20-1-2 1/ 2	Arsenic	3.94	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	34.3	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	2.60	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	957	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	124	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.56	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.41	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
1939-015	PBT-SB19-1-2 1/ 2	Arsenic	4.25	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	66.5	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	5.60	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	99.4	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	35.1	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.10	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.31	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
L11939-016	PBT-SB18-1-2 1/ 2	Arsenic	4.27	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	63.5	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	4.59	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	415	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	72.6	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.10	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	< 0.20	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95

Note: Results in mg/kg are reported on an "as received" or wet weight basis.

Lab Certification ID#: 113138300

Chk'd: *JK* App'd: *JW*
 Date App'd: 11/27/95



MONTGOMERY WATSON LABORATORIES

INORGANIC REPORT
 ERM NORTH CENTRAL/PHIBROTECH
 DEERFIELD IL
 Project Number: 3014859

Madison Division
 1 Science Court
 Madison, Wisconsin 53711
 Tel: 608 231 4747
 Fax: 608 231 4777

Sample #	Description	Test	Result	Reporting Limit	Matrix	Units	Sample Date	Analysis Date
L11939-017	PBT-SB15-1-2 1/ 2	Arsenic	13.1	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	85.0	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	11.0	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	21.0	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	54.1	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.64	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.84	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
L11939-018	PBT-SB32-3 1/ 2	Arsenic	4.98	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	65.5	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	3.14	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	19.7	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	37.7	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.05	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	< 0.20	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
L11939-019	PBT-SB32-8-29	Arsenic	3.01	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	66.7	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	7.28	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	194	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	36.9	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	< 0.04	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.28	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
L11939-020	PBT-SB29-1-2 1/ 2	Arsenic	10.8	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	75.0	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	7.75	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	33.0	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	61.3	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.08	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.39	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95

Note: Results in mg/kg are reported on an "as received" or wet weight basis.

Chk'd: *RK* App'd: *MT*
 Date App'd: *11/27/95*

Lab Certification ID#: 113138300



MONTGOMERY WATSON LABORATORIES

INORGANIC REPORT
ERM NORTH CENTRAL/PHIBROTECH
DEERFIELD IL
Project Number: 3014859

Madison Division
1 Science Court
Madison, Wisconsin 53711
Tel: 608 231 4747
Fax: 608 231 4777

Sample #	Description	Test	Result	Reporting Limit	Matrix	Units	Sample Date	Analysis Date
L11939-021	PBT-SB28-1-2 1/ 2	Arsenic	3.75	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	42.8	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	7.63	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	36.5	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	121	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.34	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	< 0.40	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
L11939-022	PBT-SB26-2-3 1/ 2	Arsenic	8.37	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	29.0	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	11.7	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	10.4	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	288	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.13	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	0.65	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95
L11939-023	PBT-SB24-6-10	Arsenic	4.44	0.10	Solid	mg/kg	25-MAY-95	14-NOV-95
		Barium	106	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Cadmium	10.4	0.25	Solid	mg/kg	25-MAY-95	10-NOV-95
		Chromium, Total	25.4	0.50	Solid	mg/kg	25-MAY-95	10-NOV-95
		Lead	902	5.00	Solid	mg/kg	25-MAY-95	10-NOV-95
		Mercury	0.19	0.04	Solid	mg/kg	25-MAY-95	07-NOV-95
		Selenium	< 0.40	0.20	Solid	mg/kg	25-MAY-95	16-NOV-95
		Silver	< 0.50	0.50	Solid	mg/kg	25-MAY-95	20-NOV-95

Footnotes

Sample #	Test	Footnote
L11939-005	Arsenic	A4
L11939-013	Arsenic	A4
L11939-013	Barium	A4

Note: Results in mg/kg are reported on an "as received" or wet weight basis.

Lab Certification ID#: 113138300

Chk'd: *RJC* App'd: *MNT*
Date App'd: 14/27/95

**MONTGOMERY WATSON LABORATORIES**

INORGANIC REPORT
ERM NORTH CENTRAL/PHIBROTECH
DEERFIELD IL
Project Number: 3014859

Madison Division
1 Science Court
Madison, Wisconsin 53711
Tel: 608 231 4747
Fax: 608 231 4777

Sample #	Test	Footnote
L11939-021	Selenium	A2
L11939-023	Selenium	A2

Note: Results in mg/kg are reported on an "as received" or wet weight basis.

Lab Certification ID#: 113138300

chk'd: *RK* App'd: *JBT*
Date App'd: 1/22/95



CHAIN OF CUSTODY RECORD

PROJ/ACT#:
ERAC/Phibroch
CITY: Deerfield
STATE: IL
SAMPLER(S):

COLLECTION DATE	COLLECTION TIME	GRAB / COMP	SAMPLE ID	NO. OF CONTAINERS	LAB USE ONLY	
					REMARKS	MATRIX
		PBT - SB14 - 1-1/2	SB13	1	X	Soil
			SB12			-002
			SB11			-003
			SB10			-004
			SB5			-005
			SB4			-006
			SB2			-007
			SB1			-008
			SB32			-009
			SB17			-010
						Soil

SPECIAL INSTRUCTIONS:

TAMPER EVIDENT SEAL INTACT? YES NO NOT PRESENT

SEAL NO.:

PROJ. MGR.: J.O. #95237

Released from Hold

RELINQUISHED BY:	DATE	TIME	SIGNATURE	DATE	TIME

C-O-C No. 014065

NAME OF COURIER: _____
AIRBILL NUMBER: _____

J. Collier 10/24/11:15 AM



CHAIN OF CUSTODY RECORD

SPECIAL INSTRUCTIONS:

<input type="checkbox"/> AROUND
<input type="checkbox"/> 2 WEEKS (standard)
<input type="checkbox"/> 1 WEEK
<input type="checkbox"/> 3 DAYS
<input type="checkbox"/> 1 DAY

<input type="checkbox"/> PECFA
<input type="checkbox"/> WILST.
<input type="checkbox"/> ACT 307
<input type="checkbox"/> REPORT DRY WT
<input type="checkbox"/> OTHER:

PROJECT NAME: ERIN / Phibrotech PROJECT #: 3041859
 CITY: Deerfield STATE: IL
 SAMPLER(S): JL

COLLECTION DATE	COLLECTION TIME	GRAB / COMP	SAMPLE ID	NO. OF CONTAINERS			REMARKS	LAB USE ONLY
				MATRIX	LAB NO.	LAB NO.		
		PBT - SB27 - 1-2 1/2	X				Sold	11/31-012
		SB21						-013
		SB20						-014
		SB19						-015
		SB18						-016
		SB17						-017
		SB15	✓					-018
		SB32 .. 3						-019
		SB32	8-29					-020
		SB29	1-2 1/2	✓	✓			-021
		SB28	✓					-022

SPECIAL INSTRUCTIONS:

TAMPER EVIDENT SEAL INTACT? YES NO NOT PRESENT
 SEAL NO.: _____

SAMPLES RECEIVED ON ICE? YES NO TEMP: °C

SIGNATURE	DATE	TIME	SIGNATURE	DATE	TIME
RELINQUISHED BY:			RECEIVED BY:		
RELINQUISHED BY:			RECEIVED BY:		
RELINQUISHED BY:			RECEIVED BY:		
RELINQUISHED BY:			RECEIVED FOR LABORATORY BY:		

C-O-C No. 014066

NAME OF COURIER: _____

AIRBILL NUMBER: _____

J. Collins 10/24 11:15 AM



MONTGOMERY WATSON

CHAIN OF CUSTODY RECORD



IEA

An Aquarion Company

126 West Center Court
Schaumburg, Illinois 60195

Phone 1-800-933-2580
Fax 847-705-1567

January 06, 1997

ERM-North Central
Dan Petersen
540 Lake Cook Road
Suite 300
Deerfield, IL 60015

Dear Dan Petersen:

Please find enclosed the analytical results of the samples received at our laboratory on November 26, 1996. This report contains sections addressing the following information at a minimum:

-Definitions
-Analytical Methodology
-State certifications

-Analytical Results
-Chain-of-custody (if applicable)

IEA Project#: L72962982

Client Project: PHIBRO-TECH

Purchase Order#:

IEA Quote#:

Site:

Copies of this analytical report and supporting data are maintained in our files for three years; samples are retained for two weeks unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact Cheryl Randle at (800) 933-2580 for any additional information. Thank you for utilizing our services, we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Sincerely

Larry D. Lewis
Director of Operations
IEA-Illinois Laboratory

Monroe,
Connecticut
203-261-4468

N. Billerica,
Massachusetts
508-667-1400

Whippany,
New Jersey
201-428-8181

Cary,
North Carolina
919-677-0090



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Sample Summary

IEA-Illinois
Laboratory ID Client ID

L72962982-001	SB05
L72962982-002	SB26
L72962982-003	SB04
L72962982-004	SB02
L72962982-005	SB01
L72962982-006	SB16
L72962982-007	SB15
L72962982-008	SB11
L72962982-009	SB13
L72962982-010	SB12
L72962982-011	SB10
L72962982-012	SB29
L72962982-013	SB24
L72962982-014	SB20
L72962982-015	SB17
L72962982-016	SB18
L72962982-017	SB19





IEA
An Aquarion Company

CLIENT: ERM-North Central
CLIENT PROJECT#: PHIBRO-TECH
SITE:-
CLIENT P.O.#:-
IEA PROJECT#: L72962982
MATRIX: SOIL

METALS

LAB ID#	CLIENT ID	ANALYTE	RESULT	QUAL PQL	UNITS	DIL.	DATE DIGESTED	DATE ANALYZED	METHOD
L72962982-001	SB05	Nickel	900	N 4.8	mg/kg 1		12/02/96	12/03/96	6010
		Date Sampled: 11/25/96	68 Percent Solid						
L72962982-002	SB26	Nickel	390	N 4.1	mg/kg 1		12/02/96	12/03/96	6010
		Date Sampled: 11/25/96	77 Percent Solid						
L72962982-003	SB04	Nickel	990	N 3.9	mg/kg 1		12/02/96	12/03/96	6010
		Date Sampled: 11/25/96	78 Percent Solid						
L72962982-004	SB02	Nickel	1500	N 3.4	mg/kg 1		12/02/96	12/03/96	6010
		Date Sampled: 11/25/96	88 Percent Solid						
L72962982-005	SB01	Nickel	220	N 4	mg/kg 1		12/02/96	12/03/96	6010
		Date Sampled: 11/25/96	82 Percent Solid						



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IEA
An Aquarion Company

CLIENT: ERM-North Central
CLIENT PROJECT#: PHIBRO-TECH
SITE:-
CLIENT P.O.#:-
IEA PROJECT#: L72962982
MATRIX: SOIL

METALS

LAB ID#	CLIENT ID	ANALYTE	RESULT	QUAL	PQL	UNITS	DIL.	DATE DIGESTED	DATE ANALYZED	METHOD	
<hr/>											
L72962982-006	SB16	Arsenic	13	N*	2.6	mg/kg	10	12/02/96	01/03/97	7060	
		Barium	48	N*	6.5	mg/kg	1	12/02/96	12/03/96	6010	
		Cadmium	32		0.65	mg/kg	1	12/02/96	12/03/96	6010	
		Chromium	15		1.3	mg/kg	1	12/02/96	12/03/96	6010	
		Lead	120		3.2	mg/kg	1	12/02/96	12/03/96	6010	
		Mercury	1.8	N	0.1	mg/kg	1	12/28/96	12/28/96	7471	
		Selenium	U	N	0.39	mg/kg	1	12/02/96	01/03/97	7740	
		Silver	U	N*	1.3	mg/kg	1	12/02/96	12/03/96	6010	
		Date Sampled:	11/25/96	82 Percent Solid							
L72962982-007	SB15	Chromium	13		1.3	mg/kg	1	12/02/96	12/03/96	6010	
		Nickel	800	N	3.8	mg/kg	1	12/02/96	12/03/96	6010	
		Date Sampled:	11/25/96	88 Percent Solid							
L72962982-008	SB11	Chromium	11		1.2	mg/kg	1	12/02/96	12/03/96	6010	
		Nickel	460	N	3.5	mg/kg	1	12/02/96	12/03/96	6010	
		Date Sampled:	11/25/96	91 Percent Solid							
L72962982-009	SB13	Nickel	13000	N	4.3	mg/kg	1	12/02/96	12/03/96	6010	
		Date Sampled:	11/25/96	77 Percent Solid							



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IEA
An Aquarion Company

CLIENT: ERM-North Central
CLIENT PROJECT#: PHIBRO-TECH
SITE:-
CLIENT P.O.#:-
IEA PROJECT#: L72962982
MATRIX: SOIL

METALS

LAB ID#	CLIENT ID	ANALYTE	RESULT	QUAL PQL	UNITS	DIL.	DATE DIGESTED	DATE ANALYZED	METHOD
L72962982-010	SB12	Nickel	670	N 4.3	mg/kg 1		12/02/96	12/03/96	6010
		Date Sampled: 11/25/96	72 Percent Solid					*	
L72962982-011	SB10	Chromium	12		mg/kg 1	1.1	12/02/96	12/03/96	6010
		Nickel	1200	N 3.4	mg/kg 1		12/02/96	12/03/96	6010
		Date Sampled: 11/25/96	96 Percent Solid						
L72962982-012	SB29	Chromium	92		mg/kg 1	1.4	12/02/96	12/03/96	6010
		Nickel	390	N 4.1	mg/kg 1		12/02/96	12/03/96	6010
		Date Sampled: 11/25/96	77 Percent Solid						
L72962982-013	SB24	Nickel	170	N 4.1	mg/kg 1		12/02/96	12/03/96	6010
		Date Sampled: 11/25/96	79 Percent Solid						
L72962982-014	SB20	Chromium	56		mg/kg 1	1.2	12/02/96	12/03/96	6010
		Date Sampled: 11/25/96	90 Percent Solid						



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IEA
An Aquarion Company

CLIENT: ERM-North Central
CLIENT PROJECT#: PHIBRO-TECH
SITE:-
CLIENT P.O.#:-
IEA PROJECT#: L72962982
MATRIX: SOIL

METALS

LAB ID#	CLIENT ID	ANALYTE	RESULT	QUAL PQL	UNITS	DIL.	DATE	DATE	FACTOR	DIGESTED	ANALYZED	METHOD
L72962982-015	SB17	Chromium	24		mg/kg	1						
		Date Sampled: 11/26/96	86 Percent Solid				12/02/96	12/03/96				6010
L72962982-016	SB18	Chromium	3100		mg/kg	1						
		Date Sampled: 11/26/96	83 Percent Solid				12/02/96	12/03/96				6010
L72962982-017	SB19	Chromium	8.3		mg/kg	1						
		Date Sampled: 11/26/96	80 Percent Solid				12/02/96	12/03/96				6010



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IEA
An Aquarion Company

CLIENT: ERM-North Central
 CLIENT PROJECT#: PHIBRO-TECH
 SITE:-
 CLIENT P.O. #-
 IEA PROJECT#: L72962982
 MATRIX: LEACHATE

TCLP METALS

LAB ID#	CLIENT ID	ANALYTE	RESULT	Qual PQL	REGULATORY LIMIT	DIL. UNITS	DATE DIGESTED	DATE ANALYZED	EXTRACTION BLANK	METHOD
L72962982-007	SB15	Chromium	U	0.011	5.0	mg/l 1	12/07/96	12/07/96	<0.011	6010
		Date Sampled: 11/25/96					Date Leached: 12/04/96			
L72962982-008	SB11	Chromium	U	0.011	5.0	mg/l 1	12/07/96	12/07/96	<0.011	6010
		Date Sampled: 11/25/96					Date Leached: 12/04/96			
L72962982-011	SB10	Chromium	U	0.011	5.0	mg/l 1	12/07/96	12/07/96	<0.011	6010
		Date Sampled: 11/25/96					Date Leached: 12/04/96			
L72962982-012	SB29	Chromium	U	0.011	5.0	mg/l 1	12/07/96	12/07/96	<0.011	6010
		Date Sampled: 11/25/96					Date Leached: 12/04/96			
L72962982-013	SB24	Chromium	0.03	0.011	5.0	mg/l 1	12/28/96	12/28/96	<0.011	6010
		Date Sampled: 11/25/96					Date Leached: 12/27/96			
L72962982-014	SB20	Chromium	U	0.011	5.0	mg/l 1	12/07/96	12/07/96	<0.011	6010
		Date Sampled: 11/25/96					Date Leached: 12/04/96			
L72962982-015	SB17	Chromium	U	0.011	5.0	mg/l 1	12/07/96	12/07/96	<0.011	6010
		Date Sampled: 11/26/96					Date Leached: 12/04/96			
L72962982-016	SB18	Chromium	0.15	0.011	5.0	mg/l 1	12/07/96	12/07/96	<0.011	6010
		Date Sampled: 11/26/96					Date Leached: 12/04/96			
L72962982-017	SB19	Chromium	U	0.011	5.0	mg/l 1	12/07/96	12/07/96	<0.011	6010
		Date Sampled: 11/26/96					Date Leached: 12/04/96			



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Wet Chemistry Analytes
 mg/Kg

Percent Solid	96%	77%	90%	86%	Date Analyzed	PQL
Client ID	SB10	SB29	SB20	SB17		
Lab ID	011	012	014	015		

Analyte	Method					
Hexavalent Chromium	7196	<0.10	<0.13	1.00	<0.12	11/26/96 0.10

Percent Solid	83%	80%	100%		Date Analyzed	PQL
Client ID	SB18	SB19	--			
Lab ID	016	017	Method Blank			

Analyte	Method					
Hexavalent Chromium	7196	<0.12	<0.12	<0.10		11/26/96 0.10

PQL=Practical Quantitation Limit, varies with sample weight and total solids



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QC Sample:L72962970-001

Sample Weight:45

Sample Volume:50

Prep Batch#:2062

Matrix:LEACHATE

Date Analyzed:12/07/96

Quality Control Data Sheet

Element	Math.	Orig. Samp.	Sample	Matrix	Matrix Spk	Duplicate	Duplicate	Serial	Post	Post	%REC
			Duplicate	Spike		Spk. Samp.	Amt. Spkd	Dilution	Spike	Result	
			%RPD	Spk. Samp.	%Rec.	Amt. Spkd	%Rec	%RPD	%RPD	Result	Amt. Spkd
Chromium	6010	<	0.011*<	0.011* <5xPQL	4.6567	5.000	93.134	4.619	5.000 <5xPQL	0.05	<50xPQL
Acceptable Limits:	"	"	"	"	"	"	"	"	"	"	"

* Test not performed

80-120% <20%

80-120% <20%

80-120% <20%

80-120% <20%

80-120% <20%

80-120% <20%

Quality Control Data Sheet
Laboratory Control Sample

OC Sample: LCS-2062

Sample Weight: 45

Samml. e Volume: 50

Matrix: LEACHATE

QC Sample:PB-2062

Sample Weight:45

Sample Volume:50

Prep Batch#:2062

Matrix:LEACHATE

Quality Control Data Sheet	
Prep Blank	

Laboratory	Date	Time	Element	Prep Blank	Acceptable
I.D.				Meth.	Result
PB-2062	12/07/96	16:30:00	Chromium	6010	0.00035 +/- 0.01

QC Sample:L72962970-001
Sample Weight:45

Sample Volume:50

Prep Batch#:2062
Matrix:LEACHATE

Quality Control Data Sheet
Associated Samples

Laboratory ID
L72962982-006
L72962982-007
L72962982-008
L72962982-011
L72962982-012
L72962982-014
L72962982-015
L72962982-016
L72962982-017

QC Sample:172962995-001

Sample Weight:0.45

Sample Volume:50

Prep Batch#:2055

Matrix:SOIL

Quality Control Data Sheet

Date Analyzed:12/09/96

Element	Meth.	Orig.Samp.	Sample	Matrix	Spk.	Duplicate	Matrix Spk	Serial	Post	Spike	Result	Amt. Spkd	%Rec	
Selenium	7740	3.051	<	0.886*	NoCalc	301.9565	434.782	68.74825	344.493	434.782	78.53175	13.2855	<4.44	<50xPQL
Arsenic	7060	292.908	<	0.592*	NoCalc	597.9348	434.782	70.15594	694.800	434.782	92.43495	27.4049	206.92	4.671701
Acceptable Limits:				<20%		80-120%		<20%		<10%		75-125%		

* Test not performed

QC Sample:JCS-2055
Sample Weight:50
Sample Volume:50
Prep Batch#:2055
Matrix:SOIL

Quality Control Data Sheet
Laboratory Control Sample

QC Sample:PB-2055
Sample Weight:50
Sample Volume:50
Prep Batch#:2055
Matrix:SOIL

Quality Control Data Sheet
Prep Blank

Laboratory	Date	Time	Element	Meth.	Result	Prep Blank	Acceptable
I.D.							
PB-2055	12/09/96	18:16:00	Arsenic		7060	0.00169	+/- 0.002
PB-2055	12/09/96	18:16:00	Selenium		7740	-0.00048	+/- 0.003

QC Sample:L72962995-001
Sample Weight:50
Sample Volume:50
Prep Batch#:2055
Matrix:SOIL

Quality Control Data Sheet
Associated Samples

Laboratory ID
L729629982-001
L729629982-002
L729629982-003
L729629982-004
L729629982-005
L729629982-006
L729629982-007
L729629982-008
L729629982-009
L729629982-010
L729629982-011
L729629982-012
L729629982-013
L729629982-014
L729629982-015
L729629982-016
L729629982-017

QC Sample:172962995-001

Sample Weight:0.45

Sample Volume:50

Prep Batch#:2055

Matrix:SOIL

Quality Control Data Sheet

Date Analyzed:12/09/96

Element	Meth.	Orig.Samp.	Result	%RPD	Spk.Samp.	Amt. Spkd	%Rec.	Matrix Spk			Serial Dilution	Post Spike Result	Amt. Spkd	%Rec
								Sample	Duplicate	Spike				
Silver	6010	<	2.962	<	2.962*	<5xPQL	1.7586	10.869	16.18	3.873	10.869	35.64	75.1061	<14.81
Barium	6010	1453.851	<	14.814*	NoCalc	1507.6090	434.782	12.36421	2106.230	434.782	150.0472	169.548	<5xPQL	1508.29
Cadmium	6010	124.522	<	1.481*	NoCalc	136.7826	10.869	>4xSpike	174.780	10.869	>4xSpike	NoCalc	125.40	<0.704216
Chromium	6010	1343.456	<	2.962*	NoCalc	1079.2850	43.478	>4xSpike	749.821	43.478	>4xSpike	NoCalc	1380.18	<2.686725
Lead	6010	9351.496	<	7.407*	NoCalc	7372.3040	108.695	>4xSpike	6004.435	108.695	>4xSpike	NoCalc	9363.09	<0.123921
Nickel	6010	71.100	<	8.888*	NoCalc	120.3456	108.695	45.306	111.756	108.695	37.404	19.1077	74.67	<4.908542
<hr/>														
Acceptable Limits:				<20%		80-120%		<20%		<10%		75-125%		

* Test not performed

QC Sample:LC5-2055
Sample Weight:50
Sample Volume:50
Prep Batch#:2055
Matrix:SOIL

Quality Control Data Sheet
Laboratory Control Sample

QC Sample:PB-2055
Sample Weight:50
Sample Volume:50
Prep Batch#:2055
Matrix:SOIL

Quality Control Data Sheet	
	Prep Blank

Laboratory	I.D.	Date	Time	Element	Meth. Result	Prep Blank	Acceptable
PB-2055		12/09/96	15:34:00	Barium	6010	0.00008	+/-0.050
PB-2055		12/09/96	15:34:00	Cadmium	6010	-0.00169	+/-0.005
PB-2055		12/09/96	15:34:00	Chromium	6010	-0.00295	+/-0.01
PB-2055		12/09/96	15:34:00	Lead	6010	-0.00072	+/-0.025
PB-2055		12/09/96	15:34:00	Nickel	6010	-0.00036	+/-0.03
PB-2055		12/09/96	15:34:00	Silver	6010	0.00140	+/-0.010

QC Sample:	L72962995-001
Sample Weight:	50
Sample Volume:	50
Prep Batch#:	2055
Matrix:	SOIL

Laboratory ID
L72962982-001
L72962982-002
L72962982-003
L72962982-004
L72962982-005
L72962982-006
L72962982-007
L72962982-008
L72962982-009
L72962982-010
L72962982-011
L72962982-012
L72962982-013
L72962982-014
L72962982-015
L72962982-016
L72962982-017

QC Sample:L72962982-002

Sample Weight:0.21

Sample Volume:1.00

Prep Batch#:HG1052

Matrix:SOIL

Quality Control Data Sheet

Date Analyzed:12/06/96

Element	Meth.	Orig.Samp.	Sample	Matrix	Matrix Spk	Serial	Post
			Duplicate	Spike	Duplicate	Dilution	Spike
			%RPD	Spk.Samp.	Amt.Spkd	%RPD	Result
Mercury	74.70	1.147 <	0.123* NoCalc	2.2714	0.952 118.	2.310	0.999 116.2381 1.50436 <0.61*
Acceptable Limits:							
<20% 80-120% <10% 75-125%							

* Test not performed

QC Sample: PB-HG1052
Sample Weight: 100
Sample Volume: 100
Prep Batch #: HG1052
Matrix: SOIL

Quality Control Data Sheet	
Prep Blank	

Laboratory	Date	Time	Element	Meth.	Result	Prep Blank	Acceptable	Prep Blank
PB-HG1052	12/06/96	23:59:59	Mercury	7470	0	+/- 0.0002		

QC Sample:	L72962982-002
Sample Weight:	100
Sample Volume:	100
Prep Batch#:	HG1052
Matrix:	SOIL

Laboratory ID
L72962982-002
L72962982-009
L72962982-010
L72962982-013

QC Sample:L72963291-001

Sample Weight:45

Sample Volume:50

Prep Batch#:2081

Matrix:LEACHATE

|| Quality Control Data Sheet ||

Date Analyzed:12/28/96

Element	Meth.	Orig. Samp.	Result	%RPD	Spk. Samp.	Amt. Spk'd	%Rec.	Spk. Samp.	Amt. Spk'd	%Rec.	%RPD	Result	%RPD	Dilution	Serial	Post	Spike	amt. Spk'd	%Rec
Chromium	6010	< 0.011	< 0.011*	<5xPQL	4.7819	5.000	95.6398	4.969	5.000	99.3992	< 0.05	<50xPQL	0.05						
Acceptable Limits:																			
<20%																			

* Test not performed

QC Sample: LCS-2081
Sample Weight:45
Sample Volume:50
Prep Batch#:2081
Matrix:LEACHATE

Quality Control Data Sheet
Laboratory Control Sample

QC Sample:PB-2081

Sample Weight:45

Sample Volume:50

Prep Batch#:2081

Matrix:LEACHATE

Quality Control Data Sheet	
Prep Blank	

Laboratory	Date	Time	Element	Meth.	Result	Prep Blank	Acceptable
I.D.							
PB-2081	12/28/96	16:14:00	Chromium	6010	0.00050	+/-0.01	

QC Sample:L72963291-001
Sample Weight:45
Sample Volume:50
Prep Batch#:2081
Matrix:LEACHATE

Quality Control Data Sheet
Associated Samples

Laboratory ID
L72962982-013

QC Sample:L72962982-006

Sample Weight:0.24

Sample Volume:100

Prep Batch#:HG1064

Matrix:SOIL

Quality Control Data Sheet

Date Analyzed:12/28/96

Element	Meth.	Orig. Samp.	Result	%RPD	Spk. Samp.	Amt. Samp.	%Rec.	Spk. Samp.	Amt. Spkd.	%Rec.	Serial	Dilution	Post Spike	Spike	%Rec
Mercury	7470	1.500	< 0.101*	2.1380	1.904	33.50001	2.104	1.666	36.25	7.88527	< 0.50*	<50xPQL			
Acceptable Limits:															
<20% 80-120%															
80-120% <10% 75-125%															

* Test not performed

QC Sample:PB-HG1064
Sample Weight:100
Sample Volume:100
Prep Batch#:HG1064
Matrix:SOIL

Quality Control Data Sheet	
Prep Blank	

Laboratory	Date	Time	Element	Meth. Result	Prep Blank	Acceptable
I.D.						
PB-HG1064	12/28/96	23:59:59	Mercury	7470	<0.0002	+/- 0.0002

QC Sample:L72962982-006
Sample Weight:100
Sample Volume:100
Prep Batch#:HGI064
Matrix:SOIL

Laboratory ID
L72962982-006



Client: ERM-North Central
IEA Job#: L72962982
Project #: PHIBRO-TECH
Matrix: Soil

Quality Control Summary

Laboratory Control Samples (mg/L)

Analyte	LCS ID	Known Conc. (mg/L)	Measured Conc. (mg/L)	Percent Recovery	
Hexavalent Chromium	LCS	0.125	0.118	94.4	
Control Limit		85 - 115%			

Duplicates (mg/Kg-Dry Weight)

Analyte	Sample ID	Sample Result	Duplicate Result	Percent RPD	
Hexavalent Chromium	L72962982-011	< 0.10	< 0.10	Not Calc.	
Control Limit		20 %			

Matrix Spikes (mg/Kg-Dry Weight)

Analyte	Sample ID	Spike Added	Sample Result	Spike Result	Percent Recovery
Hexavalent Chromium	L72962982-011	2.08	< 0.10	2.53	121.6
Control Limit		75 - 125%			





126 WEST CENTER COURT
SCHAUMBURG, ILLINOIS 60195
PH # 708-705-0740
FAX # 708-705-1567

CHAIN OF CUSTODY RECORD

NO. 4968

REGULATORY CLASSIFICATION - PLEASE SPECIFY

NPDES DRINKING WATER RCRA OTHER

COMPANY		CONTACT PERSON		PROJECT I.D.	PHONE #	FAX #	P.O. #
CRM - North Central		Don Petersen		PhiBro-Tech	#847-940-7200		
ADDRESS							
520 Lake Cook Road Suite 300							
CITY	STATE	ZIP					
Deerfield	IL						

DATE	TIME	SAMPLE I.D.	REQUESTED PARAMETERS		DELIVERABLES		(COMMENTS)	
			MATRIX	PRESERVED	# OF CONTAINERS	N/A		Routine
1/23	0915	SB05	S	1	N	✓		1
	0940	SB26	S	1	N	✓		2
	0950	SB04	S	1	N	✓		3
	1000	SB02	S	1	N	✓		4
	1035	SB01	S	1	N	✓		5
	1055	SB16	S	1	N	✓		6
	1115	SB15	S	1	N	✓		7
	1140	SB11	S	1	N	✓		8
	1150	SB13	S	1	N	✓		9
✓	1315	SB12	S	1	N	✓		10
RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED BY	DATE / TIME	REMARKS ON SAMPLE RECEIPT		IEA QUOTE NO.	IEA USE ONLY	
<i>Donna M. Murphy</i>	10:55 AM	<i>Donna M. Murphy</i>	11:08 AM					
RELINQUISHED BY (SIGNATURE)	DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME					
		<i>Vincent J. Vojcan</i>	11:09 AM					

BOTTLE INTACT
 PRESERVED
 CHILLED
 SEE REMARKS

IEA USE ONLY



IEA
SCHAUMBURG, ILLINOIS 60195
PH # 708-705-0740
FAX # 708-705-1567

CHAIN OF CUSTODY RECORD

REGULATORY CLASSIFICATION - PLEASE SPECIFY

NPDES DRINKING WATER RCRA OTHER

Page 2 of _____

NO. 4569

COMPANY	CONTACT PERSON	PROJECT ID.	PHONE #	FAX #	P.O. #
ERH-North Central	Ben Peterson	Ph BioTech	847-940-7200		
ADDRESS		REQUESTED PARAMETERS			
CITY	STATE	ZIP	MATRIX	# OF CONTAINERS	PRESERVED
Bethel	IL		TOTAL NICKEL	1	N
1343	SB27		HEX CHLORIDE	1	V
1358	SB29		LEAD CHLORIDE	1	V
1417	SB24		CHLORIDE	1	V
1440	SB20		CHLORIDE	1	V
1426	0919		CHLORIDE	1	V
0932	SB18		CHLORIDE	1	V
0948	SB19		CHLORIDE	1	V
DATE / TIME		SAMPLE ID	(COMMENTS)		
11/25/00	1327	SB10			
11/25/00	1327	SB27			
11/26/00	0919	SB17			
11/26/00	0919	SB18			
11/26/00	0919	SB19			
RELINQUISHED BY (SIGNATURE)		DATE / TIME	RECEIVED BY	DATE / TIME	REMARKS ON SAMPLE RECEIPT
<u>John M. Jelgersma</u>		11/26/00: 10:55 AM Green Bay	<u>Tom 11:08</u>		<input type="checkbox"/> IEA QUOTE NO. <u>200</u>
RELINQUISHED BY (SIGNATURE)		DATE / TIME	RECEIVED FOR LAB BY	DATE / TIME	
			<u>Vince Wagner</u>	11/26/00 10:10	
					<input type="checkbox"/> IEA USE ONLY
					<input type="checkbox"/> BOTTLE INTACT <input type="checkbox"/> PRESERVED <input type="checkbox"/> CHILLED
					<input type="checkbox"/> CUSTODY SEALS <input type="checkbox"/> SEALS INTACT <input type="checkbox"/> SEE REMARKS



IEA

An Aquarion Company

126 West Center Court
Schaumburg, Illinois 60195

Phone 1-800-933-2580
Fax 847-705-1567

January 06, 1997

ERM-North Central
Dan Petersen
540 Lake Cook Road
Suite 300
Deerfield, IL 60015

Dear Dan Petersen:

Please find enclosed the analytical results of the samples received at our laboratory on November 27, 1996. This report contains sections addressing the following information at a minimum:

- | | |
|-------------------------|-----------------------------------|
| -Definitions | -Analytical Results |
| -Analytical Methodology | -Chain-of-custody (if applicable) |
| -State certifications | |

IEA Project#: L72962989

Client Project: PHIBRO-TECH

Purchase Order#:

IEA Quote#:

Site:

Copies of this analytical report and supporting data are maintained in our files for three years; samples are retained for two weeks unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact Cheryl Randle at (800) 933-2580 for any additional information. Thank you for utilizing our services, we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.
Sincerely

Barry D. Lewis
Director of Operations
IEA-Illinois Laboratory

Monroe,
Connecticut
203-261-4468

N. Billerica,
Massachusetts
508-667-1400

Whippany,
New Jersey
201-428-8181

Cary,
North Carolina
919-677-0090



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IEA
An Aquarion Company

Sample Summary

IEA-Illinois
Laboratory ID Client ID

L72962989-001	SB03
L72962989-002	SB25
L72962989-003	SB31
L72962989-004	SB32
L72962989-005	SB21
L72962989-006	SB27



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IEA
An Aquarion Company

CLIENT: ERM-North Central
CLIENT PROJECT#: PHIBRO-TECH
SITE:-
CLIENT P.O.#:-
IEA PROJECT#: L72962989
MATRIX: SOIL

METALS

LAB ID#	CLIENT ID	ANALYTE	RESULT	QUAL PQL	UNITS	DIL.	DATE DIGESTED	DATE ANALYZED	METHOD
L72962989-001	SB03	Nickel	8.3	N 3.4	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled: 11/26/96	92 Percent Solid						
L72962989-002	SB25	Nickel	580	N 3.6	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled: 11/26/96	92 Percent Solid						
L72962989-003	SB31	Nickel	35	N 3.8	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled: 11/26/96	84 Percent Solid						
L72962989-004	SB32	Nickel	10	N 3.4	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled: 11/26/96	95 Percent Solid						
L72962989-006	SB27	Nickel	20	N 3.4	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled: 11/26/96	97 Percent Solid						



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IEA
An Aquarion Company

CLIENT: ERM-North Central
CLIENT PROJECT#: PHIBRO-TECH
SITE:-
CLIENT P.O.#:-
IEA PROJECT#: L72962989
MATRIX: LEACHATE

TCLP METALS

LAB ID#	CLIENT ID	ANALYTE	RESULT	Qual PQL	REGULATORY LIMIT	DIL. UNITS	DATE FACTOR DIGESTED	DATE ANALYZED	EXTRACTION BLANK	METHOD
L72962989-003	SB31	Chromium	U	0.011	5.0 mg/l	1	12/28/96	12/28/96	<0.011	6010
		Date Sampled: 11/26/96					Date Leached: 12/27/96			
L72962989-005	SB21	Chromium	U	0.011	5.0 mg/l	1	12/10/96	12/11/96	<0.011	6010
		Date Sampled: 11/26/96					Date Leached: 12/07/96			



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Wet Chemistry Analytes
 mg/Kg

Percent Solid	94%	100%			Date Analyzed	PQL
	SB21	---				
Client ID	005	Method				
		Blank				
Analyte	Method					
Hexavalent Chromium	7196	<0.11	<0.10		11/27/96	0.10

PQL=Practical Quantitation Limit, varies with sample weight and total solids



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QC Sample: L72963075-001
Sample Weight :45
Sample Volume:50
Prep Batch#:2066
Matrix:LEACHATE

Quality Control Data Sheet
Associated Samples

Laboratory ID
L72962989-005

QC Sample:L72962989-001

Sample Weight:0.48

Sample Volume:50

PreP Batch#:2058

Matrix:SOIL

Quality Control Data Sheet

Date Analyzed:12/04/96

Element	Meth.	Orig. Samp.	Sample	Matrix	Matrix Spk	Duplicate	Post spike	Serial	Dilution	Post spike	Result	%RPD	%Rec
			Duplicate	Spike	Duplicate	Duplicate	Result	Dilution	Result	Amt. Spkd	amt. Spkd		
			Spk. Samp.	%Rec.	%Rec.	%RPD	%Rec.						
Nickel	6010	15.262	<	6.793*	NoCalc	90.7708	104.166	72.488	87.872	100.000	72.6095	0.16747	<
Acceptable Limits:													
80-120%													
<20%													
<10%													
75-125%													

* Test not performed

QC Sample:LCS-2058
Sample Weight:50
Sample Volume:50
Prep Batch#:2058
Matrix:SOIL

Quality Control Data Sheet
Laboratory Control Sample

QC Sample:PB-2058
Sample Weight:50
Sample Volume:50
Prep Batch#:2058
Matrix:SOTL

Quality Control Data Sheet	
Prep Blank	

Laboratory	Date	Time	Element	Meth. Result	Prep Blank	Acceptable
I.D.						
PB-2058	12/04/96	12:05:00	Nickel	6010	-0.000080	+/-0.03

QC Sample:L72963291-001

Sample Weight:45

Sample Volume:50

Prep Batch#:2081

Matrix:LEACHATE

Element	Meth.	Orig. Samp.	Result	%RPD	Spk. Samp.	Amt. Spk'd	%Rec.	Spk. Samp.	Amt. Spk'd	%Rec.	%RPD	Result	%RPD	Result	Serial Dilution	Post Spike	
Chromium	6010	<	0.011	<	0.011*	<5xPQL		4.7819	5.000	95.6398	4.969	5.000	99.3992	3.85502	< 0.05	<50xPQL	
Acceptable Limits:																	

* Test not performed

Quality Control Data Sheet

Date Analyzed:12/28/96

QC Sample:LCS-2081
Sample Weight:45
Sample Volume:50
Prep Batch#:2081
Matrix:LEACHATE

QC Sample:PB-2081
Sample Weight:45
Sample Volume:50
Prep Batch#:2081
Matrix:LIBACHATE

Quality Control Data Sheet	
Prep Blank	

Laboratory	Date	Time	Element	Meth.	Result	Prep Blank	Acceptable
I.D.							
PB-2081	12/28/96	16:14:00	Chromium		6010	0.00050	+/-0.01

QC Sample	L72963291-001
Sample Weight:	45
Sample Volume:	50
Prep Batch#:	2081
Matrix:	LEACHATE

Laboratory ID	
	L72962989-003

QC Sample: I72963075-001

Sample Weight: 45

Sample Volume: 50

Prep Batch#: 2066

Matrix: LEACHATE

Quality Control Data Sheet

Date Analyzed: 12/12/96

Element	Meth.	Orig. Samp.	Result	%RPD	Spk. Samp.	Amt. Spkd.	%Rec.	Spk. Samp.	Amt. Spkd.	%Rec.	Matrix Spk	Duplicate	Post Spike	Serial	Dilution	%RPD	Result	Ant. Spkd	%Rec
Chromium	6010	0.012	< 0.011*	NoCalc	4.7943	5.000	95.6276	4.897	5.000	97.692	12.13573	< 20%	0.05	<50XPQL	< 10%	75-125%			
Acceptable Limits				<20%															

* Test not performed

QC Sample ICS-2066
Sample Weight: 45
Sample Volume: 50
Prep Batch#: 2066
Matrix: LEACHATE

Quality Control Data Sheet
Laboratory Control Sample

QC Sample:PB-2066

Sample Weight:45

Sample Volume:50

Prep Batch#:2066

Matrix:LEACHATE

Quality Control Data Sheet	
QC Sample:PB-2066	
Prep Blank	

Laboratory	I.D.	Date	Time	Element	Meth.	Result	Prep Blank	Acceptable
PB-2066		12/12/96	19:03:00	Chromium		601.0	0.00026	+/- 0.01

Client: ERM-North Central
 IEA Job#: L72962989
 Project #: PHIBRO-TECH
 Matrix: Soil

Quality Control Summary

Laboratory Control Samples (mg/L)

Analyte	LCS ID	Known Conc. (mg/L)	Measured Conc. (mg/L)	Percent Recovery
Hexavalent Chromium	LCS	0.125	0.118	94.4
Control Limit				85 - 115%

Duplicates (mg/Kg-Dry Weight)

Analyte	Sample ID	Sample Result	Duplicate Result	Percent RPD
Hexavalent Chromium	L72962982-011	< 0.10	< 0.10	Not Calc.
Control Limit				20 %

Matrix Spikes (mg/Kg-Dry Weight)

Analyte	Sample ID	Spike Added	Sample Result	Spike Result	Percent Recovery
Hexavalent Chromium	L72962982-011	2.08	< 0.10	2.53	121.6
Control Limit					75 - 125%



QC Sample: LCS-2058

Sample Weight: 50

Digitized by srujanika@gmail.com

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Batch#: Z058

Quality Control Data Sheet
Laboratory Control Sample

Laboratory	I.D.	Date	Time	Element	Meth.	Result	LCS	Known	%Rec
LCS-2058		12/04/96	12:08:00	Barium	6010	1.90056	2.0000	95.0	
LCS-2058		12/04/96	12:08:00	Cadmium	6010	0.05675	0.0500	113.5	
LCS-2058		12/04/96	12:08:00	Chromium	6010	0.18063	0.2000	90.3	
LCS-2058		12/04/96	12:08:00	Lead	6010	0.46311	0.5000	92.6	
LCS-2058		12/04/96	12:08:00	Nickel	6010	0.46041	0.5000	92.0	
LCS-2058		12/04/96	12:08:00	Silver	6010	0.03695	0.0500	73.9	

QC Sample:PB-2058
Sample Weight:50
Sample Volume:50
Prep Batch#:2058
Matrix:SOIL

Quality Control Data Sheet			
Prep Blank			

Laboratory	Date	Time	Element	Meth.	Result	Prep Blank	Acceptable
I.D.							
PB-2058	12/04/96	12:05:00	Barium	6010	-0.00027	+/-0.050	
PB-2058	12/04/96	12:05:00	Cadmium	6010	0.00181	+/-0.005	
PB-2058	12/04/96	12:05:00	Chromium	6010	-0.00111	+/-0.01	
PB-2058	12/04/96	12:05:00	Lead	6010	0.01365	+/-0.025	
PB-2058	12/04/96	12:05:00	Nickel	6010	-0.00080	+/-0.03	
PB-2058	12/04/96	12:05:00	Silver	6010	0.00165	+/-0.010	

QC Sample:L72962989-001
Sample Weight:0.48
Sample Volume:50
Prep Batch#:2058

Quality Control Data Sheet

Date Analyzed:12/10/96

Matrix:SOIL

Element	Meth.	Orig.Samp.	Sample	Duplicate	Matrix	Spike	Spk.Samp.	%Rec.	Matrix Spk	Duplicate	Spk.Samp.	%Rec.	Serial Dilution	Post Spike Result	Amt. Spkd	%Rec	
Selenium	7740	<	0.679 < 0.679*	<5xPQL	271.3458	416.666 65.12299	321.500	400.000 80.375	20.9652	6.92	<50xPQL						
Arsenic	7060	11.237 <	0.452* NoCalc	359.5792	416.666 83.602	371.446	400.000 90.05213	7.42870	14.56	<50xPQL							
Acceptable Limits:																	
<20%																	
80-120%																	
75-125%																	

* Test not performed

QC Sample:LCS-2058
Sample Weight:50
Sample Volume:50
Prep Batch#:2058
Matrix:SOIL

Quality Control Data Sheet
Laboratory Control Sample

Laboratory	I.D.	Date	Time	Element	LCS	Known	%Rec
LCS-2058	12/10/96	18:19:00	Arsenic	7060	1.93336	2.0000	96.6
LCS-2058	12/10/96	18:19:00	Selenium	7740	1.74692	2.0000	87.3

Acceptable Limits:

80-120%

QC Sample:PB-2058

Sample Weight:50

Sample Volume:50

Prep Batch#:2058

Matrix:SOIL

Quality Control Data Sheet	
Prep Blank	

Laboratory	Date	Time	Element	Meth. Result	Prep Blank	Acceptable
I.D.						
PB-2058	12/10/96	18:16:00	Arsenic	7060	0.00110	+/-0.002
PB-2058	12/10/96	18:16:00	Selenium	7740	0.00306	+/-0.003

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Central Mahto 31

8-1 + volume = 100

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Quality Control Data Sheet |

Date Analyzed: 12/06/96

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IEA

An Aquarion Company

126 West Center Court
Schaumburg, Illinois 60195

Phone 1-800-933-2580
Fax 847-705-1567

January 06, 1997

ERM-North Central
Dan Petersen
540 Lake Cook Road
Suite 300
Deerfield, IL 60015

Dear Dan Petersen:

Please find enclosed the analytical results of the samples received at our laboratory on December 02, 1996. This report contains sections addressing the following information at a minimum:

- | | |
|-------------------------|-----------------------------------|
| -Definitions | -Analytical Results |
| -Analytical Methodology | -Chain-of-custody (if applicable) |
| -State certifications | |

IEA Project#: L72963019

Client Project#: 95237JI

Purchase Order#:

IEA Quote#:

Site:

PRI BRO-TECH

Copies of this analytical report and supporting data are maintained in our files for three years; samples are retained for two weeks unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact Cheryl Randle at (800) 933-2580 for any additional information. Thank you for utilizing our services, we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

incredely

Cheryl Randle for
Barry D. Lewis
Director of Operations
IEA-Illinois Laboratory

RECEIVED
1/25/97

25

Monroe,
Connecticut
203-261-4468

N. Billerica,
Massachusetts
508-667-1400

Whippany,
New Jersey
201-428-8181

Cary,
North Carolina
919-677-0090



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Definitions of Data Qualifiers

Organic Analysis

- B -** This analyte was detected in the method blank associated with this sample. The concentration reported in the method blank is suspected to contribute to the reported concentration of the analyte in the sample.
- E -** The concentration reported for this compound exceeds the calibration range of the instrument.
- H -** This sample had one or more surrogate recoveries above the acceptance criteria due to coelution with a nontarget compound.
- J -** The reported concentration for this compound is an estimated value. When associated with tentatively identified compounds (TICs), the result is quantitated based on a response factor of 1. When the flag is associated with a calibrated target compound, the compound has been positively identified and the reported concentration is above the method detection limit (MDL), but below the practical quantitation limit (PQL).
- L -** This sample had one or more surrogate recoveries below the acceptance criteria due to matrix effects. This effect was confirmed through a second analysis of the sample.
- LI -** The recovery of the internal standard corresponding to this compound did not meet the acceptance criteria due to matrix effects. This effect was confirmed through a second analysis of the sample.
- T1 -** The chromatographic profile of this sample does not match that of a gasoline standard. Another unidentifiable petroleum product is present in this sample. Quantitation is based on a gasoline standard calibration.
- T2 -** The chromatographic profile of this sample does not match that of a diesel fuel standard. Another petroleum product is present in this sample. Quantitation is based on a diesel fuel standard calibration.
- U -** This compound was not detected in the sample above the PQL.
- UD -** This compound was not detected above the elevated PQL in this diluted analysis.

Inorganic Analysis

- E -** The reported value was estimated due to the presence of interference.
- M -** Duplicate injection precision was not met.
- N -** Spiked sample recovery was not within control limits.
- S -** The reported value was determined by the Method of Standard Additions(MSA).
- W -** Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.
- * -** Duplicate analysis was not within control limits.
- + -** Correlation Coefficient for the MSA is less than 0.995.





IEA

An Aquarion Company

Sample Summary

IEA-Illinois
Laboratory ID **Client ID**

L72963019-001	SB14
L72963019-002	SB06
L72963019-003	SB22
L72963019-004	SB23
L72963019-005	SB30
L72963019-006	SB07
L72963019-007	SB08



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IEA
An Aquarion Company

CLIENT: ERM-North Central

CLIENT PROJECT#: 95237JI

SITE:-

CLIENT P.O.#:-

IEA PROJECT#: L72963019

MATRIX: SOIL

METALS

LAB ID#	CLIENT ID	ANALYTE	RESULT	QUAL PQL	UNITS	DIL.	DATE DIGESTED	DATE ANALYZED	METHOD
L72963019-001	SB14	Nickel	480	N 3.8	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled: 12/02/96	87 Percent Solid						
L72963019-002	SB06	Arsenic	U	0.26	mg/kg	1	12/03/96	12/10/96	7060
		Barium	62	N 6.6	mg/kg	1	12/03/96	12/04/96	6010
		Cadmium	3.3	0.66	mg/kg	1	12/03/96	12/04/96	6010
		Chromium	120	N 1.3	mg/kg	1	12/03/96	12/04/96	6010
		Lead	1700	N 3.3	mg/kg	1	12/03/96	12/04/96	6010
		Mercury	1	0.12	mg/kg	1	12/05/96	12/06/96	7471
		Selenium	U	N* 0.4	mg/kg	1	12/03/96	12/11/96	7740
		Silver	U	N 1.3	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled: 12/02/96	79 Percent Solid						
L72963019-003	SB22	Nickel	350	N 3.7	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled: 12/02/96	87 Percent Solid						
L72963019-004	SB23	Nickel	120	N 3.3	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled: 12/02/96	93 Percent Solid						



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IEA
An Aquarion Company

CLIENT: ERM-North Central
CLIENT PROJECT#: 95237JI
SITE:-
CLIENT P.O.#:-
IEA PROJECT#: L72963019
MATRIX: SOIL

METALS

LAB ID#	CLIENT ID	ANALYTE	RESULT	QUAL	PQL	UNITS	DIL.	DATE DIGESTED	DATE ANALYZED	METHOD	
<hr/>											
L72963019-005	SB30	Arsenic	14		0.33	mg/kg	1	12/03/96	12/10/96	7060	
		Barium	500	N	8.1	mg/kg	1	12/03/96	12/04/96	6010	
		Cadmium	270		8.1	mg/kg	10	12/03/96	12/07/96	6010	
		Chromium	840	N	1.6	mg/kg	1	12/03/96	12/04/96	6010	
		Lead	2200	N	4.1	mg/kg	1	12/03/96	12/04/96	6010	
		Mercury	2.6		0.14	mg/kg	1	12/05/96	12/06/96	7471	
		Nickel	46000	N	49	mg/kg	10	12/03/96	12/07/96	6010	
		Selenium	1.3	N*	0.49	mg/kg	1	12/03/96	12/11/96	7740	
		Silver		U	N	1.6	mg/kg	1	12/03/96	12/04/96	6010
Date Sampled: 12/02/96		64 Percent Solid									
L72963019-006	SB07	Arsenic	4.3		0.25	mg/kg	1	12/03/96	12/10/96	7060	
		Barium	150	N	6.2	mg/kg	1	12/03/96	12/04/96	6010	
		Cadmium	7.2		0.62	mg/kg	1	12/03/96	12/04/96	6010	
		Chromium	36	N	1.2	mg/kg	1	12/03/96	12/04/96	6010	
		Lead	160	N	3.1	mg/kg	1	12/03/96	12/04/96	6010	
		Mercury	1.8		0.12	mg/kg	1	12/05/96	12/06/96	7471	
		Nickel	1200	N	3.7	mg/kg	1	12/03/96	12/04/96	6010	
		Selenium	0.5	N*	0.37	mg/kg	1	12/03/96	12/11/96	7740	
		Silver		U	NN	1.2	mg/kg	1	12/03/96	12/04/96	6010
Date Sampled: 12/02/96		86 Percent Solid									



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IEA

An Aquarion Company

CLIENT: ERM-North Central

CLIENT PROJECT#: 95237JI

SITE:-

CLIENT P.O.#:-

IEA PROJECT#: L72963019

MATRIX: SOIL

METALS

LAB ID#	CLIENT ID	ANALYTE	RESULT	QUAL PQL	UNITS	DIL. FACTOR	DATE DIGESTED	DATE ANALYZED	METHOD
<hr/>									
L72963019-007	SB08	Arsenic	2.7		mg/kg	1	12/03/96	12/10/96	7060
		Barium	64	N	mg/kg	1	12/03/96	12/04/96	6010
		Cadmium	5.4		mg/kg	1	12/03/96	12/04/96	6010
		Chromium	19	N	mg/kg	1	12/03/96	12/04/96	6010
		Lead	150	N	mg/kg	1	12/03/96	12/04/96	6010
		Mercury	0.48		mg/kg	1	12/05/96	12/06/96	7471
		Nickel	950	N	mg/kg	1	12/03/96	12/04/96	6010
		Selenium	U	N*	mg/kg	1	12/03/96	12/11/96	7740
		Silver	U	N	mg/kg	1	12/03/96	12/04/96	6010

Date Sampled: 12/02/96 91 Percent Solid



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IEA

An Aquarion Company

CLIENT: ERM-North Central

CLIENT PROJECT#: 95237JI

SITE:-

CLIENT P.O.#:-

IEA PROJECT#: L72963019

MATRIX: LEACHATE

TCLP METALS

LAB ID#	CLIENT ID	ANALYTE	RESULT	Qual PQL	REGULATORY LIMIT	DIL.	DATE UNITS	DATE DIGESTED	DATE ANALYZED	EXTRACTION BLANK	METHOD
L72963019-001	SB14	Chromium	U	0.011	5.0	mg/l	1	12/07/96	12/07/96	<0.011	6010
		Date Sampled: 12/02/96						Date Leached: 12/04/96			
L72963019-003	SB22	Chromium	U	0.011	5.0	mg/l	1	12/07/96	12/07/96	<0.011	6010
		Date Sampled: 12/02/96						Date Leached: 12/04/96			
L72963019-005	SB30	Chromium	U	0.011	5.0	mg/l	1	01/15/97	01/15/97	<0.011	6010
		Date Sampled: 12/02/96						Date Leached: 01/14/97			
L72963019-006	SB07	Chromium	U	0.011	5.0	mg/l	1	01/15/97	01/15/97	<0.011	6010
		Date Sampled: 12/02/96						Date Leached: 01/14/97			
L72963019-007	SB08	Chromium	U	0.011	5.0	mg/l	1	01/15/97	01/15/97	<0.011	6010
		Date Sampled: 12/02/96						Date Leached: 01/14/97			



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Quality Control Data Sheet

Date Analyzed: 12/04/96

QC Sample: L72962989~001

Sample Weight: 0.48

Sample Volume: 50

Prep Batch#: 2058

Matrix: SOIL

Element	Meth.	Orig. Samp.	Result	Sample		Matrix		Matrix Spk		Serial	
				Duplicate	%RPD	Spk. Samp.	Amt. Spk'd	%Rec.	Spk. Samp.	Amt. Spk'd	%Rec.
Silver	6010	<	2.264*	<5xPQL	5.3041	10.416	50.92	5.480	10.000	54.8	7.34014 <
Barium	6010	<	11.322*	NoCalc	348.9625	416.666	79.683	329.336	400.000	78.0965	2.0103 <
Cadmium	6010	<	1.132*	<5xPQL	9.7145	10.416	93.26	9.232	10.000	92.22	1.12141 <
Chromium	6010	<	10.912*	NoCalc	38.5416	41.666	66.31	37.346	40.000	66.08375	0.34178
Lead	6010	<	19.570*	NoCalc	95.4062	104.166	72.802	90.674	100.000	71.10317	2.36104
Nickel	6010	<	15.262*	NoCalc	90.7708	104.166	72.488	87.872	100.000	72.6095	0.16747 <
Acceptable Limits:				<20%		80-120%		<20%		<10%	

* Test not performed

75-125%

QC Sample#:PB-HG1052
Sample Weight:1.00
Sample Volume:1.00
Prep Batch#:HG1052
Matrix:SOIL

Quality Control Data Sheet
Prep Blank

Laboratory	Date	Time	Element	Meth.	Prep Blank	Acceptable
I.D.				Result	Blank	
PB-HG1052	12/06/96	23:59:59	Mercury	<0.0002	+/- 0.0002	

QC Sample:	L72962982-002
Sample Weight:	1.00
Sample Volume:	1.00
Prep Batch#:	HG1052
Matrix:	SOIL

Laboratory ID
L72963019-002
L72963019-004
L72963019-005
L72963019-006
L72963019-007

QC Sample:L72963019-005
Sample Weight:45
Sample Volume:50
Prep Batch#:2096
Matrix:LEACHATE

Quality Control Data Sheet

Date Analyzed:01/15/97

Element	Meth.	Orig. Samp.	Result	%RPD	Sample	Matrix	Spike	Duplicate	Matrix Spk	Duplicate	Serial Dilution	Post Spike Result	Amt. Spk'd	%Rec
Chromium	6010	<	0.011	<5xPQL	0.011*	5.2263	5.000	104.5276	5.399	5.000	107.9808	3.24994	<50xPQL	0.05
Acceptable Limits:														
<20%														

* Test not performed

QC Sample:LCS-2096
Sample Weight:45
Sample Volume:50
Prep Batch#:2096
Matrix:LEACHATE

Laboratory I.D.	Date	Time	Element	LCS Meth.	Result	Known	%Rec
LCS-2096	01/15/97	13:57:00	Chromium	6010	4.17948	5.0000	83.5

Acceptable Limits:

QC Sample:PB-2096
Sample Weight:45
Sample Volume:50
Prep Batch#:2096
Matrix:LEACHATE

quality Control Data Sheet
Prep Blank

Laboratory	Date	Time	Element	Meth. Result	Prep Blank	Acceptable
I.D.						
PB-2096	01/15/97	16:13:00	Chromium	6010	0.00065	+/-0.01

CLIENT:ERM-North Central
 CLIENT PROJECT#:95237JI
 SITE:
 CLIENT P.O.#:-
 ICA PROJECT#:L72963019
 MATRIX:LEACHATE

TCLP METALS

LAB ID#	CLIENT ID	ANALYTE	RESULT	DUAL PQL	REGULATORY		DIL.	DATE DIGESTED	DATE ANALYZED	EXTRACTION BLANK	METHOD
					LIMIT	UNITS					
L72963019-005	SB30	Chromium	U	0.011	5.0	mg/l	1	01/15/97	01/15/97	<0.011	6010
		Date Sampled: 12/02/96						Date Leached:01/14/97			
L72963019-006	SB07	Chromium	U	0.011	5.0	mg/l	1	01/15/97	01/15/97	<0.011	6010
		Date Sampled: 12/02/96						Date Leached:01/14/97			
L72963019-007	SB08	Chromium	U	0.011	5.0	mg/l	1	01/15/97	01/15/97	<0.011	6010
		Date Sampled: 12/02/96						Date Leached:01/14/97			

Client: ERM -North Central
Project #: Phibro-Tech
IEA Project #: L72962982

Metals Analysis

Matrix: Soil

Lab ID#	Client ID	Analyte	Result	Qual PQI	Units	Dilution Factor	Date Digested	Date Analyzed	Method	
L72962982-006	SB16	Arsenic	13	N*	2.6	mg/kg	10	12/02/96	1/03/97	7060
		Barium	48	N*	6.5	mg/kg	1	12/02/96	12/03/96	6010
		Cadmium	32		0.65	mg/kg	1	12/02/96	12/03/96	6010
		Chromium	15		1.3	mg/kg	1	12/02/96	12/03/96	6010
		Nickel	4800	N	3.9	mg/kg	1	12/02/96	12/03/96	6010
		Lead	120		3.2	mg/kg	1	12/02/96	12/03/96	6010
		Mercury	1.8	N	0.1	mg/kg	1	12/28/96	12/28/96	7471
		Selenium	U	N	0.39	mg/kg	1	12/02/96	1/03/97	7740
		Silver	U	N*	1.3	mg/kg	1	12/02/96	12/03/96	6010
		Date Sampled:	11/25/96							
L72962982-014	SB20	Chromium	56		1.2	mg/kg	1	12/02/96	12/03/96	6010
		Nickel	10	N	3.5	mg/kg	1	12/02/96	12/03/96	6010
		Date Sampled:	11/25/96							
L72962982-015	SB17	Chromium	24		1.3	mg/kg	1	12/02/96	12/03/96	6010
		Nickel	16	N	3.8	mg/kg	1	12/02/96	12/03/96	6010
		Date Sampled:	11/26/96							
L72962982-016	SB18	Chromium	5100		1.2	mg/kg	1	12/02/96	12/03/96	6010
		Nickel	81	N	3.6	mg/kg	1	12/02/96	12/03/96	6010
		Date Sampled:	8/12/97							
L72962982-017	SB19	Chromium	8.3		1.3	mg/kg	1	12/02/96	12/03/96	6010
		Nickel	18	N	3.8	mg/kg	1	12/02/96	12/03/96	6010
		Date Sampled:	11/26/96							

Client: ERM -North Central

Project #: Phibro-Tech

IEA Project #: L72962989

Matrix: Soil

Metals Analysis

Lab ID#	Client ID	Analyte	Result	Qual PQL	Units	Dilution	Date	Date Analyzed	Method
						Factor	Digested		
L72962989-001	SB03	Arsenic	6.1	0.23	mg/kg	1	12/03/96	12/10/97	7060
		Barium	9.2 *	5.7	mg/kg	1	12/03/96	12/04/96	6010
		Cadmium	U	0.57	mg/kg	1	12/03/96	12/04/96	6010
		Chromium	5.9 N*	1.1	mg/kg	1	12/03/96	12/04/96	6010
		Nickel	8.3 N	3.4	mg/kg	1	12/03/96	12/04/96	6010
		Lead	11	2.8	mg/kg	1	12.03/96	12/04/96	6010
		Mercury	U	0.11	mg/kg	1	12/05/96	12/06/96	7471
		Selenium	U N	0.34	mg/kg	1	12/03/96	12/10/97	7740
		Silver	U N*	1.1	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled:	11/26/96						
L72962989-002	SB25	Arsenic	1.5	0.24	mg/kg	1	12/03/96	12/10/97	7060
		Barium	15 *	6	mg/kg	1	12/03/96	12/04/96	6010
		Cadmium	3.3	0.6	mg/kg	1	12/03/96	12/04/96	6010
		Chromium	5.3 N*	1.2	mg/kg	1	12/03/96	12/04/96	6010
		Nickel	580 N	3.6	mg/kg	1	12/03/96	12/04/96	6010
		Lead	6.5	3	mg/kg	1	12.03/96	12/04/96	6010
		Mercury	U	0.1	mg/kg	1	12/05/96	12/06/96	7471
		Selenium	U N	0.36	mg/kg	1	12/03/96	12/10/97	7740
		Silver	U N*	1.2	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled:	11/26/96						
L72962989-003	SB31	Arsenic	2.9	0.25	mg/kg	1	12/03/96	12/10/97	7060
		Barium	U *	6.3	mg/kg	1	12/03/96	12/04/96	6010
		Cadmium	U	0.63	mg/kg	1	12/03/96	12/04/96	6010
		Chromium	120 N*	1.3	mg/kg	1	12/03/96	12/04/96	6010
		Nickel	35 N	3.8	mg/kg	1	12/03/96	12/04/96	6010
		Lead	19	3.2	mg/kg	1	12.03/96	12/04/96	6010
		Mercury	U	0.11	mg/kg	1	12/05/96	12/06/96	7471
		Selenium	U N	0.38	mg/kg	1	12/03/96	12/10/97	7740
		Silver	U N*	1.3	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled:	11/26/96						
L72962989-005	SB21	Chromium	5.8	1.1	mg/kg	1	12/03/96	12/04/96	6010
		Nickel	15 N*	3.3	mg/kg	1	12/03/96	12/04/96	6010
		Date Sampled:	11/26/96						

Metals Analysis

Client: ERM -North Central
Project #: Phibro-Tech
IEA Project #: L72963019
Matrix: Soil

Lab ID#	Client ID	Analyte	Result	Qual PQL	Units	Dilution	Date	Analyzed Method
						Factor	Digested	
L73019-004	SB23	Nickel	120	N	3.3	mg/kg	1	12/03/96 12/04/96 6010
		Date Sampled:	11/26/96					